An Address
ON
THE TELEPHONE ATTACHMENT IN SURGERY.

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GENTLEMEN,—My attention was first called to the possibility of using the telephone in surgery by a leading article in THE LANCET 32 years ago.[1] The article was concerned mainly with the attempts which had been made to determine by electrical means the position of the bullet in the body of President Garfield during the two months which elapsed between the infliction of the wound and his death in the summer of 1881. These attempts were made with an induction balance, but Professor Graham Bell, speaking afterwards at a meeting of the American Association for the Advancement of Science, suggested, according to THE LANCET, that:—

> Either for the detection of bullets or for the estimation of the depth of a ball already localised by the induction balance a simpler electrical contrivance may be employed. It consists of a telephone, to one terminal of which a fine needle is fixed, and to the other a plate of metal of the same nature as the needle. The plate is placed on the limb to be examined, and the needle is thrust in where the bullet is believed to be, and when it strikes the ball a galvanic battery is formed within the body. ..... This will cause a click to be heard in the telephone each time the bullet is struck. This is a far simpler apparatus than the induction balance, and one far more easily procured, and it would be well if surgeons called upon to treat gunshot wounds would test its practical utility. Professor Graham Bell's efforts to apply electricity to surgery are most praiseworthy, and the results he has obtained merit the attention of surgeons.

Possibly several workers carried out Graham Bell's suggestion. For my own part, I saw immediately that this was a method which ought to be tried at the first opportunity, and a suitable case presented itself at the Aberdeen Royal Infirmary in 1887. A woman had been shot in the face by a revolver, and the bullet had gone into the antrum and had caused a good deal of destruction of bone. The arrangement which I made for Dr. Ogilvie Will, who performed the operation, consisted in the first place of a silver plate 6 in. long and 4 in. wide, which was placed upon the patient's skin, the skin being freely moistened with salt solution in order to make it as good a conductor as possible. This plate was then connected to one terminal of the ordinary Bell telephone, and the other terminal was attached to a silver probe, thus carrying out Bell's condition as to metals of the same nature. On introducing the probe into the entrance wound no sound was heard until a considerable depth had been reached, when a distinct rattle became audible, characteristic of contact with the metal, and the bullet was extracted without any difficulty. Some years later a London Hospital physician, who was bringing me cases at a time when I was using the telephone probe to verify the results of early X ray localisations, learned the use of this instrument, and subsequently showed it to Sir Frederick Treves, who used it, greatly to his satisfaction, in the South African War. More particularly it enabled him to differentiate, as neither the common probe nor the finger could do, between a distorted and broken up Mauser bullet and a fragment of bone.[2]

Until quite recently I took it for granted that the condition laid down by Graham Bell—namely, that the instruments used for exploration must be of the same metal as the plate placed upon the patient's skin—was essential to the success of the method. It is only since the outbreak of the present war, while assisting at various operations and noticing the considerable difficulty experienced by surgeons in finding the bullets, even after the most precise X ray localisation, that I began to experiment again with the telephone, with the result that I have now extended its applicability to any metallic instrument to which the surgeon chooses to attach it.

THE PHYSICS OF THE TELEPHONE.

Before describing in detail the procedure I recommend, which has been tried successfully in a number of cases, I should like to make a few preliminary remarks about the physical questions involved in the construction of the telephone, since a clear understanding on this point is necessary to an intelligent appreciation of the use of the telephone as a surgical instrument. With the use of the telephone in ordinary life everyone is familiar, but perhaps I may be pardoned for reminding my colleagues of the nature of its construction and the principles upon which it acts. The Graham-Bell telephone consists of a permanent magnet, around one pole of which is a helix or coil of very fine insulated wire. The fineness of the wire and the number of its turns decide the resistance of the telephone, and, incidentally, affect its cost. If the currents for which it is to be used are very small, while the voltage or electrical pressure is high, the number of turns in the coil must be correspondingly large. On the other hand, if the voltage is very small there should be fewer turns, and these of thicker wire, so that the resistance may not be too great. The action of the telephone depends upon variable currents passing through the coil, which cause variations in the magnetic strength and lead to the attraction and release of a small, thin iron disc placed in front of the magnet. This vibratory action of the disc results in the emission of sound waves. It is by far the most sensitive instrument for the detection, by sound, of the feeblest intermittent currents, but it gives no sound during the steady passage through it of a continuous current. This fact has the most practical bearing on the method of using the telephone in surgery, as I shall hope to demonstrate shortly.

When two dissimilar metals are separated by an electrolyte they form the elements of an ordinary primary battery, and wires attached to them, on being joined together, convey an electric current. The pressure or voltage depends upon several factors, but generally it can be stated that the difference of potential between various metals rarely exceeds two volts. Until recently I entertained the idea that if dissimilar metals were attached to the terminals of the telephone the moment that these metals touched the human body the latter would act as an electrolyte and a click would be heard in the telephone, which might

[1] THE LANCET, Jan. 20th, 1883, p. 108.

[2] Brit. Med. Jour., March 10th, 1900.

impair the value of the method for the subsequent detection of a bullet by contact. On making the experiment, however, I found that this effect was in no way prejudicial. It is true that a slight sound is sometimes heard when the instrument first comes in contact with the tissues, but not even the least experienced person could confuse it with the sound produced on contact with the embedded bullet or other metal.

I have tried many pairs of ordinary metals in order to discover which would yield the best result. The metals for which we have to search most frequently are lead, nickel, copper, iron, and some of the iron alloys used in shell manufacture. The surgeon's metallic instruments are usually steel, silver, or nickel-plated. With any of these instruments attached to one terminal of the telephone I find that on contact with any of the above-mentioned embedded metals the loudest sound is elicited when a plate of carbon, such as is used in an ordinary bichromate cell, is attached to the other pole and placed, in the manner described at the beginning, upon the moistened skin of the patient. The result may be still further improved if a fine layer of iodine is interposed between the skin and the carbon plate; this is readily done by brushing the skin with the usual iodine solution employed as a disinfecting agent.

The currents generated in these circumstances are, of course, small in amount, and of low pressure. It is important, therefore, to reduce the resistance of the body as much as possible, and on this account it is necessary to use on the skin a plate of carbon of as large a size as is convenient, and to increase the conductivity of the skin by moistening it well with the usual salt solution. The resistance of the human body is high, varying from 3000 ohms through the skin when dry, down to 300 when the skin is moistened, and it appeared likely, as has proved to be the case, that the cheap telephones of low resistance would be best suited to detect these small currents. A telephone of 60 ohms resistance, costing only a few shillings, gives a louder sound than the more expensive high resistance telephones used in wireless telegraphy. I have here two telephones of 40 ohms resistance, and I am investigating as to how far the resistance may be lowered in order to obtain the most distinctive sound.

THE SURGICAL PROCEDURE.

Briefly put, the method I advocate for adoption is the use of a telephone, preferably with double receivers, connected together by means of a steel or elastic band, so that each ear has its separate receiver. This not only increases the intensity of the sound, but also serves to cut off extraneous sounds which might interfere with the audibleness of the telephone. Should the surgeon wish to have one ear uncovered so as to be able to attend to the remarks of anyone near him, it is quite a simple matter to move aside one of the receivers. This double arrangement, however, is not essential, and a single telephone gives quite good results if the surgeon's hearing is acute. The carbon plate is placed upon the patient's moistened skin, and plaster or bandage may be used for holding it in position tightly against the skin. The other end of the telephone should have attached to it a bare wire, of silver preferably, which has been disinfected, by boiling or otherwise as the surgeon may direct. One end of this wire being attached to the telephone terminal, which of course cannot be disinfected readily, the other end need be handled only by the surgeon or his assistant with the usual antiseptic precautions, and the wire can either be wound round any instrument it is desired to use, or, as I have demonstrated this evening, a spring clip may be employed by means of which the wire can be conveniently brought into connexion with the knife, probe, needle, or forceps, as the case may be.

Under these conditions, if the instrument is introduced into the body it will, on first contact with any metal, give rise to an unmistakeable click carried through the telephone, and then, if it be gently moved or slightly disturbed so as to make a rubbing contact with the foreign body, an equally unmistakeable loud rattle will be elicited. By such means the metal can be dissected out (if the knife is used), or otherwise freed from the encircling tissues, because a constant control can be exercised over the foreign body by reason of the microphonic rattle it produces when the instrument comes into contact with it. A very useful point to bear in mind is that in cases where a foreign body has been carefully localised by means of X rays, a needle can be attached to the telephone in the manner stated, run down on to the foreign body, and, when the characteristic sound is heard, can be maintained in its position as a guide before any incision is made.

The telephone attachment to forceps is particularly useful, because these can be used as a probe, and then, when opened to include the foreign body, this action gives a characteristic sound which betokens when the foreign body is between the jaws. I had a pair of bullet forceps made some time ago which were thoroughly insulated outside with vulcanite, the bare metal only remaining on the inner side of the jaws. This modification has the advantage that the sound can only be heard when the bullet is actually between the jaws, otherwise an equal sound, and a quite misleading one, would be heard if the forceps were not grasping the bullet but were only touching it on their outer side.

It is obvious that the surgeon must be careful, when the telephone is attached to his instrument, not to allow that instrument to touch any other metallic instrument which may be already in the wound, such as a retractor or artery forceps, because, of course, this will make an audible impression in the same way as the embedded metal itself. As a rule, this is not difficult to avoid, but should he be exploring a narrow and deep wound where there is any difficulty in preventing possible contact with his instruments I would recommend him to place a rubber drainage tube over his exploring instrument, except in the neighbourhood of its point. In this way he will conveniently insulate it from any of the surgical instruments which it might encounter along the walls of the wound. Another simple plan is to cover the needle or probe with a thin layer of shellac, by heating and applying the shellac in the same way as with an electrolysis needle when the action is desired to be confined to the point. By such means the bulk of one's instrument may be insulated.

UTILITY IN OPHTHALMIC SURGERY.

The telephone arrangement seems to me to have a special utility in ophthalmic surgery. For many years ophthalmic surgeons have successfully extracted very small pieces of iron or steel from the eyeball by means of a powerful electro-magnet.

Unfortunately, if the lodged foreign body is of non-magnetic metal, such as shot, for example, unless it is visible in the anterior part of the eye, its extraction is impossible, and the eye in consequence is lost. It might be well worth attempting the removal of such bodies with the telephone attachment, because a very distinct sound is produced in the telephone on contact with the minutest metal particle. Indeed, particles so small as to be almost invisible would be quite appreciably audible. The ideal procedure would be to have the foreign body precisely localised by means of X rays, as is being constantly done at Moorfields and other eye hospitals, and then to attempt its removal with the aid of the telephone. I am afraid, however, that this method will not be of much assistance in cases where the foreign body is lodged in the vitreous and not firmly attached to the coats of the eyeball. From experiments with the eyes of dead animals I find that a small shot, placed in the vitreous cavity, is not easily detected by means of a needle with the telephone attachment. It has already been made plain that the whole success of this method depends upon an actual momentary contact with the metallic foreign body. The vitreous is of so yielding a nature that the small foreign body is pushed away in front of the needle, and this intervening layer of vitreous prevents a good metallic contact from being made. Should the foreign body happen to be between the needle and the fundus, then it can be readily heard, and of course if it is embedded in the coats of the eye there is no difficulty whatever in obtaining the usual sound on impact with the exploring needle. In spite of the difficulty with the vitreous, I would suggest that, before enucleating an eye containing a non-magnetic foreign body, the ophthalmic surgeon should first attempt the removal of the foreign body with the telephone attachment.

CASES.

Comparatively recently I have had two cases of small pieces of shell in the orbit. The first of these was brought to me by Mr. Cruise. The case had been radiographed by Captain Howard Humphris, of the 3rd London (Wandsworth) Military Hospital, and the fragment was indicated at the upper and inner part of the left orbit. Mr. Cruise asked me to let him try the telephone for its removal. At that time I had not ascertained that carbon was the best element to place upon the patient's skin, and I used a piece of platinum foil which I had in an old Grove's battery. This was bandaged on a skin thoroughly moistened with salt solution (the position is of no consequence), and a long needle was placed in a holder and fixed to the other end of the telephone. The patient having been anæsthetised Mr. Cruise, with the double telephone at his ears, introduced the needle in the direction indicated by the radiographs, and at some considerable depth he heard the microphonic rattle. Sir A. Pearce Gould, who was present on this occasion, held the needle in position while Mr. Cruise cut down along it through a comparatively small incision. The telephone was then attached to the forceps, the rattle again being distinctly heard, and the foreign body was removed immediately afterwards, the whole operation being carried out with the least possible disturbance. I think such a case very well illustrates the advantage which the surgeon gains by trusting to his hearing instead of making a large wound and retracting its walls, and depending upon his finger and his sight for the detection of the foreign body.

The next case, also in connexion with the orbit, was one in which Mr. Armour removed a piece of shell which had entered the head above the right eye and had gone through into the left orbit, where it lodged. Here again Mr. Armour ran down a needle attached to the telephone, and heard the sound on contact with the foreign body before he made any incision. Mr. Herbert Menzies assisted him at this operation. The foreign body was successfully removed, and the patient, whose eye is now normal, has had no subsequent trouble.

The same arrangement has now been used successfully in quite a number of cases. The latest of these may be cited, since it is especially interesting owing to the fact that the flattened casing of a German bullet was deeply embedded in the lumbar region of a very large and muscular man. The depth of the bullet in the tissues was between 3 and 4 inches, and Mr. English, who successfully removed it after it had previously been localised very accurately by means of X rays, ran a long needle down on to it, and heard the contact through the telephone before making an incision. He found the telephone most useful throughout the operation, which was made more expeditious in consequence.

In view of these cases I would take the liberty of suggesting that the surgeon, now that the telephone is available, should go to the trouble of altering somewhat his technique. Instead of trusting to his sense of touch through his rubber-gloved fingers he should trust to his sense of hearing, and guided by this it ought to be possible for him not only to find the foreign body but to free it from its surrounding entanglements. With the aid of the telephone he can always keep in touch with its boundaries, whatever the surgical instrument he may be using at the time; and finally, by means of his forceps he should be able to remove it through a comparatively small incision and with the least possible disturbance of the parts. This necessarily implies some preliminary practice and, what seems to be still more difficult, some alteration of habits long since acquired. The special value at the present moment of such a procedure as the use of the telephone, in view of the large numbers of operations which are necessary in cases returned from the seat of war, needs no insistence, and I believe that the time will come when no surgeon will attempt to remove a deeply embedded metallic body without having this telephone attachment at his command.

MODIFICATIONS.

Of the modifications which might be proposed in the general arrangement the most obvious is the introduction of a small dry cell into the circuit. I have not found, however, any marked advantage to accrue, and on the ground of absolute simplicity the method as already described seems to be preferable. At the same time the battery experiment is easily tried, with the small dry cells now used for hand lamps, and quite portable. One objection to the battery is that if it is interposed the sound produced on contact of the instrument with the tissues is heard very distinctly, and it seems to me that with the battery there is a great risk of stray and misleading sounds occurring in the telephone. In view of the fact also that one might be in districts where a battery was not available, it seems better to keep to the arrangement outlined above, especially now that the carbon plate is employed, which is practically indestructible and requires no attention or renewals.

Several attempts have been made over a number of years to apply electricity in some form to this surgical purpose. The idea of using electricity for the detection of bullets embedded in tissues has been traced back to 1862, when a method was brought forward, apparently with no great success, by Professor Favre, of Marseilles. Ten years later a civil engineer, named de Wilde, proposed the use of an electric bell as the signal for the presence of a metallic body in the tissues. In the case of President Garfield, as I stated at the beginning of this paper, the induction balance was employed; this last I do not look upon as a practical method of locating bullets, all that it does being simply to reveal their presence. The telephone, I believe, will be found the most simple and reliable method for aiding the surgeon in the removal of a bullet previously localised by means of X rays.

If something other than the sound of a telephone were required—for instance, in the case of a deaf surgeon—it could be obtained by a modification of the method I have been advocating. Instead of taking the current through the telephone it could be passed through a suitably wound galvanometer and the movement of the galvanometer needle would then indicate contact with the metal, or this arrangement could work as a relay and a bell would ring every time the bullet was touched by the surgeon's implements. It seems to me, however, that these are less practical than the simple plan advocated in this paper, and I have every confidence in recommending it to the attention of the surgeon.

SPLENECTOMY FOR ENLARGED SPLEENS WITH ANÆMIA.[1]

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AT the risk of being regarded as elementary I would like in the first instance to recall to your minds very briefly something of the physiology of the spleen. It has in part, as you will remember, a very slow blood current owing to the terminal arrangement of some of its arteries, which do not end in capillaries but in dilated spaces in the splenic pulp. In this slow current the leucocytes pick up the damaged and worn-out red corpuscles, digest them, break up their colouring matter, and with part of it produce some, at all events, of the colouring matter of the bile. Beyond this main function it is probable that the spleen takes some part in the destruction of infections, again through the leucocytes in its meshes, and it may have a hormonal function which to some extent controls pancreatic secretion.

For many years past the spleen has occasionally been removed for various conditions, for displacement with or without rotation of its pedicle, for cystic disease, for traumatisms, or for what has been called simple hypertrophy. This last condition probably was an early stage of the splenic enlargement with anæmia, which we now operate on under the name of Banti's disease, acholuric jaundice, &c. However that may be, splenectomy for the conditions I have mentioned above proved to be a reasonably safe procedure and fully justified. Unfortunately the ardour of some surgeons led them to remove the enlarged spleen for leukæmia with ghastly results. I do not know a well-authenticated case in which the patient recovered, and happily we are all agreed that the operation in leukæmia is quite unjustifiable. Experience of splenectomy has shown that a patient whose spleen has been removed may live a perfectly normal life under *ordinary* conditions and that the expectation of life is not shortened. The assertion has been made that therefore a patient is no worse off without a spleen than with one, but this seems to me hardly justified at present. This may not be true if the patient is involved in a struggle for existence against an infection—pneumonic, typhoidal, pyogenetic, or similar poison—when the whole forces of the body may be necessary to carry the fight to a successful issue. The only case I am acquainted with bearing on this point is one mentioned by French;[2] the patient, a boy aged 6, survived both measles and scarlet fever after splenectomy. It would be interesting to know if in other cases recovery has occurred after similar illnesses. In the absence of the spleen other organs appear to carry out its work—the lymphatic glands, the bone marrow, and the liver.

Under the title "enlarged spleen with anæmia," which I have taken as my subject, several conditions are grouped together; in all of them we find enlarged spleen, marked reduction in the number of red corpuscles and in hæmoglobin, with either some degree of leukopenia, a normal leucocyte count, or one that is somewhat increased. The enlargement of the organ and the diminution in the red corpuscles appear to be due to great exaggeration of the chief normal function of the spleen. This exaggerated function may be excited in different ways, in one case by the poison of syphilis, in kala-azar and in malaria by the particular parasites associated with these diseases; perhaps in other cases a streptothrix as suggested by Gibson[3] may be the stimulation. Further investigation is not unlikely to reveal other provocative agents of a similar kind.

I said just now that under the title "enlarged spleen with anæmia" various conditions are described having certain common features. Then comes divergence, and further knowledge is required to determine whether we have to deal with really different diseases provoked for instance by different forms of infection, or merely with accidental divergences due to the different reaction of individual patients' tissues. Under the names Banti's disease, acholuric jaundice, hæmolytic jaundice, and syphilitic splenomegaly we find grouped most of the splenomegalies with anæmia, at all events in this country. Banti's disease implies in addition to enlarged spleen and anæmia a marked tendency to hæmorrhages chiefly from the gastro-intestinal tract, ascites, and in some cases cirrhosis of the liver or thrombosis of some part of the portal system. I propose to show you a typical example.

Acholuric jaundice has additional features which the name implies, jaundice with an absence of bile in the urine. The jaundice appears very early in life and has been described as congenital; there is in addition an unusual fragility of the red corpuscles, but this may entirely disappear after splenectomy.

Hæmolytic jaundice resembles in many respects acholuric jaundice, but the jaundice does not appear until, it may be, some years after birth. The urine is deeply coloured, but may not contain the ordinary bile pigments, the red corpuscles are unduly fragile, and cholecystitis with or without gall-stones may occur.

[1] A lecture to a post-graduate class at the Birmingham General Hospital.

[2] Proceedings of the Royal Society of Medicine, vol. vii., No. 5, Clinical Section, p. 77.

[3] Quarterly Journal of Medicine, January, 1914, vol. vii., No. 26.

Syphilitic splenomegaly with anæmia appears to be due to congenital syphilis, and may persist despite antisyphilitic treatment, including the administration of salvarsan. In the few cases I have seen recorded there is no mention of hæmorrhages occurring.

My own experience of splenectomy for enlarged spleen with anæmia comprises three cases which I now describe; they were all referred to me from the medical wards by my colleague, Sir Robert Simon. Two other cases with enlarged spleen are present for your examination. So far neither of them is the subject of anæmia, but we hope to keep them under observation that we may learn what their future will be, especially as to whether at a later date they will develop anæmia and the other changes sometimes associated with it.

CASE 1. *Banti's disease; splenomegaly, anæmia, hæmatemesis, melæna, ascites; splenectomy.*—The patient, aged 19, was admitted to the General Hospital under Sir Robert Simon on June 19th, 1913, complaining of pain in the abdomen and of passing blood by the bowel. The patient was fairly well nourished, but looked very anæmic and ill; the temperature was 101° F. and the pulse 128. The past history showed that for about six years he had complained at times of aching pain in the upper abdomen, generally coming on some time after a meal and relieved by the taking of food. The pain was not constant; it lasted only a few minutes as a rule; vomiting did not occur; and there were often intervals of freedom from pain which might last weeks. Four days before admission when getting out of bed he suddenly felt very weak and could hardly get up. He experienced no pain, but stayed in bed all day, and noticed that the bowel action was dark red in colour; this continued until the patient came to hospital. On the night of admission he vomited 10 oz. of bright-red clotted blood, and this hæmatemesis with the past history suggested at first duodenal ulcer.

The spleen was found to be enlarged; it extended inwards to the linea alba; it felt hard and rather uneven, but was not tender. The only other point needing mention was the presence of soft bruits, systolic in time, heard over all the heart valves. Bleeding from the bowel continued for three days and was treated by the administration of horse serum. The blood examination on June 25th showed red cells 1,800,000, white cells 10,000, and hæmoglobin 20 per cent. On July 8th the figures were—red cells 1,900,000, white cells 7500, and hæmoglobin 30 per cent. On the 11th it was noted that the abdomen was becoming distended and the surface veins prominent. On the 14th distension of the abdomen was more marked and the patient's colour did not improve. On the 19th distension was marked and there was much fluid in the abdomen. The pulse ranged from 120 to 96, but very rarely was less than 108. The temperature varied from 98° to 101°, but was usually from 99° to 100°; the respirations were from 24 to 36. The urine rarely exceeded 30 oz.; its specific gravity was rather low, but it contained no abnormal constituent.

I saw the patient on several occasions with Sir Robert Simon, and we arrived at the conclusion that he was suffering from Banti's disease. Operation was discussed, but postponed in the hope that as there were no fresh hæmorrhages the general condition would improve. This hope was, however, not fulfilled; on the contrary, a large and increasing ascites developed, and we felt that the prospect of a successful operative interference was diminishing rather than increasing, and the patient was therefore submitted to operation on July 21st.

Operation.—The incision commenced in the middle of the epigastrium high up and extended outwards below and parallel to the left costal margin, then down the linea semilunaris to the level of the umbilicus. A large quantity of pale yellow, slightly turbid fluid estimated at several pints escaped from the peritoneal cavity; this fluid appeared to be paler and thinner than the ordinary fluid of ascites due to cirrhosis of the liver. The spleen was very carefully delivered through the extensive incision; it was fortunately found to be free from adhesions. The pedicle contained enormous vessels, all of which were free from thrombosis, but in the walls of the pedicle were numerous small masses of tissue which were evidently spleneliculi. It was determined to tie the pedicle in sections with silk; when this had been partly accomplished some of the vessels tore owing to the weight of the organ. The remainder of the pedicle was therefore clamped, the spleen cut away, and the vessels unsecured were tied individually, and finally a ligature was tied round the whole stump of the pedicle so that it was absolutely dry. The liver was quite free from cirrhosis, and no thrombosis of vessels was recognised, but owing to the patient's feeble condition it was impossible to make any systematic investigation on this point. The abdominal incision was closed, and whilst this was being effected 1½ pints of normal saline were transfused into one of the veins of the arm, as collapse was rather marked.

The spleen with its contained blood weighed 4 lb.; it was somewhat harder than a normal spleen and was practically free from perisplenitis. Examination of the ascitic fluid showed that it had a specific gravity of 1011; its reaction was alkaline; it contained a heavy cloud of albumin, and was free from sugar, from urea, and from blood. Microscopically a few small round and oval cells were found.

On the day following the operation the patient had completely recovered from the shock, and at the end of a week he looked decidedly better; the pulse was then generally below 100. The blood count was: red cells 2,700,000, white cells 12,500, and hæmoglobin 50 per cent. After this time improvement was slow; the pulse again quickened, and was often as high as 120 and over. About the middle of August there was considerable abdominal pain, vomiting occurred several times, and occasionally diarrhœa; a good deal of ascitic fluid was present, and the boy looked thin and anæmic. Soon after this he was sent to the Jaffray Hospital, and on Sept. 8th was allowed to get up; his pulse, however, was still quick, generally 110 or higher, but he gained 3 lb. in weight in eight days. Becoming discontented he left the hospital on Sept. 25th, and was lost sight of until recently.

Subsequent condition.—The patient was examined on Dec. 9th, 1913. He had gained weight and felt well except that he tired easily. It was thought that a little free fluid existed in the abdomen. The red count was 4,000,000, hæmoglobin 40 per cent., and leucocytes 16,000. In May, 1914, the red count was 4,000,000 and white cells 12,000. The abdomen appears to be free from fluid and the patient is at work as a railway porter. He occasionally has slight epistaxis.

CASE 2.—Male, aged 20. Shop assistant. Admitted under Sir Robert Simon Feb. 9th, 1914. Complaint on admission, jaundice four months ago, since which he had been confined to bed with intermittent pain in the left flank. The patient stated that previous to this time his health had been good. Father, mother, six brothers, and three sisters are in good health.

The present illness commenced in the middle of October, 1913, with an attack of jaundice lasting about three weeks. Since this time he had felt weak though not very ill. When admitted he was found to be muscular but distinctly thin; the face was pale and sallow, but there was no actual jaundice. The temperature was 101° F., pulse 120, and respirations 24. The teeth were very bad, many molars missing and the incisors of the upper jaw decayed; the tongue was clean but rather dry. The abdomen was relaxed; there was no pain or tenderness. The spleen was found to be greatly enlarged; it reached downwards to the mid-Poupart line, and 2 inches to the right of the middle line of the abdomen. The liver was somewhat enlarged; its lower border was felt 2 inches below the costal margin. Heart, faint mitral systolic murmur. No notable condition in the respiratory system. Blood examination showed: red cells 2,700,000 and white cells 2800. On Feb. 12th the red cells were 1,010,000, white cells 2200, and hæmoglobin 50 per cent.; on the 14th the figures were 1,587,500, 2000, and 60 per cent. respectively. On the 19th it was thought that the spleen was somewhat smaller, and as there was a little expectoration this was examined for tubercle bacilli but none were found. From time to time there seemed to be some slight variation in the size of the spleen. The blood count on May 3rd showed—red cells 2,600,000, white cells 5800, and hæmoglobin 50 per cent. The patient's condition was not satisfactory. He looked ill, was markedly anæmic, and appeared to be losing weight. His temperature was 103° or more at

night, the pulse varied from 112 to 128, and the respirations were generally 24. There was no evidence of free fluid in the abdomen.

Splenectomy was determined upon and was carried out on March 9th. An incision was made in the left semilunar line, and this was prolonged upwards, the seventh and eighth costal cartilages near the bony ribs being divided, thus giving considerable addition to the operating space. The abdominal cavity was free from fluid, there was much perisplenitis, and fibrous adhesions above attached the spleen to the under surface of the diaphragm and to the posterior abdominal wall. These adhesions were divided, several vessels were tied here, and the rest of the oozing was stopped by packing, whilst the splenic pedicle was ligatured in detail. The liver looked quite healthy except for a localised patch of perihepatitis on the upper surface of the right lobe; this area was not as large as the palm. The abdomen was closed, the divided rib cartilages being sutured with catgut. The spleen was found to weigh 3 lb. 5 oz. There was moderate shock, as the operation had been rather prolonged owing to the time spent in dividing the adhesions mentioned above, but half an hour after the operation the patient's condition was quite satisfactory.

The wound healed per primam, and at first it seemed as though the patient were going to make a complete and satisfactory recovery. The temperature fell to normal and remained so for five days; it then slowly began to rise again, and eventually returned almost to its old level, being on an average one degree lower than before the operation. The blood counts after operation were as follows:—

	Red cells.	White cells.	Hæmoglobin.
March 12th, 1914	2,260,000	8,000	50%
,, 14th, ,,	2,250,000	7,000	60%
,, 26th, ,,	3,200,000	7,000	90%
,, 31st, ,,	3,690,000	7,800	90%

On April 24th a number of carious teeth were extracted as the patient was not doing well, and it was thought wise to extirpate any possible infective focus. During the next few days he was losing condition, complained of discomfort in the abdomen, he had bronchitis on both sides of the chest, and he looked thinner and more ill. The abdomen began to swell, the legs became œdematous, the eyelids puffy, and there were some slight petechial spots observed. The patient's relatives getting discontented with his want of improvement took him home on May 16th. At that time he had a large ascitic collection, his legs were swollen, his temperature was about 103° at night, his pulse, always quick, ranged from 110 to 120, and he looked as though he were steadily losing ground. [I am unable to trace the patient.—G.B.]

The immediate improvement after splenectomy gave ground for believing that speedy restoration to health would ensue; the subsequent relapse was therefore the more disappointing. The improvement in temperature following operation suggested that the extirpation of the spleen had removed the great source of infection. The subsequent rise came on very gradually, and eventually the evening rise was as great as before the operation.

CASE 3.—A girl aged 6 was admitted under Sir Robert Simon on Jan. 21st, 1914, with a history that on the day previously she had vomited a pint of brownish fluid mixed with blood-clots. Six weeks before the child had had a severe hæmatemesis; she vomited several times at school and three times after she reached home. The previous history showed that she had been under treatment for four years for paralysis of the left arm, which had practically recovered. Scarlet fever and measles with bronchitis had attacked her in the first 18 months of life. The spleen was enlarged and quite mobile; its upper border reached to about three inches below the left costal arch. Blood examination showed red cells 3,300,000, white cells 26,000, and hæmoglobin 70 per cent. Further examination showed about the same amount of red cells and a diminishing white blood count, which eventually was as low as 7000. Later the white blood count rose to 18,000, the red cells being then 3,600,000 and the hæmoglobin 60 per cent. A general examination of the cavities revealed no other evidence of disease.

On Feb. 25th the child was remitted to me for splenectomy, with the diagnosis of early Banti's disease. Incision was made in the left semilunar line. The spleen was very sessile to the stomach, and there were some adhesions below the pedicle, but these were easily ligatured piece by piece, and the operation of removal was a comparatively easy one. It was noted at the time that the liver presented an absolutely healthy appearance; it was perfectly smooth, its capsule was not thickened, and its colour was typical of a healthy liver; there was no ascitic fluid. Shock was moderately severe, and saline was given by the rectum with speedy improvement. The pulse, however, remained persistently quick; it had been about 100 before the operation. Immediately afterwards it was 176; it, however, dropped to below 120. There was persistent vomiting at first, and the patient was very restless. On the third day after the operation the pulse had quickened up to 160–180, the respirations were over 40, the temperature was as high as 105° F. for some hours, and the child died the next day.

The necropsy showed a satisfactory condition of the wound area; there was no peritonitis, and the only condition found to explain death was the state of the liver, the naked-eye appearance of which suggested delayed anæsthetic poisoning. The anæsthetic given was a mixture of ether and chloroform. The note of the examination of the liver by Dr. Logie, visiting pathologist, is as follows:—

Macroscopically the liver was enlarged and pale, its surface smooth and glossy. It cut easily and appeared to be in a state of acute hepatitis with cloudy degeneration. On microscopical examination the portal tracts showed well-marked cellular increase and in many cases marked proliferation of bile-ducts. The intralobular capillaries were dilated and well filled with blood. The vessels generally were engorged, and there were some small hæmorrhages. The parenchyma showed atrophy of the liver cells which were opaque, more or less necrotic, and all in a state of fatty degeneration. The nuclei were obscured and stained badly. The cells in the neighbourhood of the portal tracts showed some fatty infiltration. Those more remote were degenerate and in some parts quite destroyed.

Dr. A. G. Gibson has been kind enough to examine the spleens removed from these patients, and in one of them, the organ from Case 2, tubercle bacilli were found; in the other two cases no infective organisms were recognised. At the operation on Case 2 no tuberculous condition was recognised in the abdominal cavity, and the question arises whether the primary condition in the spleen was one of tubercle or whether this was superimposed on some pre-existing change.

CASE 4.—A male, aged 12, was admitted on April 25th, 1914, under Sir Robert Simon, complaining of pain in his ankles. The patient is one of a family of ten, of whom three died in infancy; the mother has had two miscarriages. The other members of the family are all healthy except one boy, aged 15, who is always rather pale and whose feet are "flat." The patient has had no previous illnesses. Three years ago last March he complained that the right foot was painful. His mother states that this condition first came on after the boy had been kicking a ball about. The foot was rested, but the pain continued, and he has never been able to use his foot since. He had his foot put up in a plaster-of-Paris case 15 months ago, and this case he wore for ten weeks. Six weeks ago his left foot also became painful, and since then he has not been able to use either foot. For the last fortnight his ankles have been tender and swollen.

Condition on admission.—A well-nourished and fairly intelligent boy unable to walk but can lie in bed comfortably. Both feet show well-marked pes planus. There is considerable œdema of both ankles. Abdomen: Full and rather flat; the spleen is large and palpable as low down as the umbilicus; a distinct notch can be felt. The liver is not palpable. There is a soft systolic murmur at the apex of the heart; this is not propagated towards the axilla. The murmur can also be heard to the left side of the sternum; the pulmonary second sound sharp and rather accentuated. Lungs normal. Two blood counts at intervals of a few days gave the following results: red cells 6,400,000 and 5,200,000, white cells 9600 and 8500, and hæmoglobin 90 per cent.

The condition of the ankles improved under treatment, and the patient was discharged as an out-patient, so that the condition of his spleen and his blood might be kept under observation.

CASE 5.—A male, aged 37, was admitted under me on May 1st, 1914, complaining of pain in the left side of the abdomen, duration six weeks. The father and mother are healthy; 2 sisters and 4 brothers alive and healthy. The patient is a moderate drinker and smoker. No previous illnesses, but he has occasionally suffered from epistaxis while bending over a basin washing himself. The patient attributes his present condition to straining himself while at work six weeks ago, when he did three days of extra heavy work; following this he had severe pain in his left side. There has been no vomiting of blood nor melæna.

Condition on admission.—A healthy looking man; complains of no pain at present nor of discomfort. Temperature and pulse normal. Abdomen: On palpation the spleen is found to be markedly enlarged, extending downwards almost to the umbilicus. It is of firm consistence, but the edge is not well marked except at the lower part; it is not tender. Liver not enlarged. Urine normal. Wassermann reaction negative. Blood examinations on three consecutive days: white cells, 16,000, 15,000, and 15,000; red cells, 4,400,000, 4,200,000, and 4,300,000; and hæmoglobin, 80 per cent.

The patient was discharged, but was made an out-patient to be kept under observation.

In conclusion, may I remind you that the first case is a typical Banti's disease; the second is probably of the same nature, though we have positive evidence of a definite infection, tubercle. As to the third, in which the patient died with an acute hepatitis after operation, the hæmorrhages suggest she too may have been an early example of this type. Cases 4 and 5 both have considerably enlarged spleens without blood changes, and their future course will be watched with interest. Case 5 was seen in December, 1914, when he appeared to be in good health; he had, however, found a lighter occupation. The splenic enlargement had not altered; no opportunity offered of examining his blood. At present it is impossible to determine the meaning of the splenomegaly of which they are the subjects.

Birmingham.

A CRITICAL STUDY OF THE BASIS OF ABDERHALDEN'S SERUM REACTION.

BY W. E. BULLOCK, M.D. EDIN.,
IMPERIAL CANCER RESEARCH FUND.

THE great mass of literature dealing with the subject of this paper has been reviewed so recently by Abderhalden,[1] by Lange,[2] and others that it is unnecessary here to do more than to refer to special points and to emphasise the division of opinion as to the value of the reaction in the diagnosis of pregnancy and of disease. On the one hand, numerous writers[3] support Abderhalden's results and conclusions completely; one observer declared it to be possible to distinguish between a gastric and a duodenal ulcer.[4] On the other hand, a few writers[5] on the subject totally deny the existence of specific protective ferments. Between these extremes there are some who partially confirm Abderhalden's work, and others who corroborate the experimental results but offer another explanation of them.[6]

The chief object of the work to be described was to test the reliability of the reaction as applied to the diagnosis of cancer. But before carrying out the routine empirical tests devised by Abderhalden the experimental results on which the whole method is based were examined. The experimental results claimed are briefly: 1. By injecting animals with solutions of sucrose, maltose, or other sugars strange to the economy of the animal employed protective ferments are developed in the body which decompose the strange sugars and render them useful or at least innocuous to the animal. The evidence adduced that such ferments are produced is as follows. The blood serum of the normal animal is mixed with a solution of the sugar to be injected and the mixture examined with the polariscope; no alteration in the rotatory power of the solution takes place. When now the blood serum is obtained after the animal has received an injection of the sugar and is mixed with the sugar solution as before, the rotatory power of the solution gradually changes, indicating a splitting up of the sugar. 2. When an animal is injected with a foreign protein a similar phenomenon is said to be observed. Ferments are produced which are able to break up the protein into peptones and amino-acids, acting in this way in a protective capacity. The optical method was again employed, in this case allowing the blood serum to act upon solutions of peptones prepared from the protein used to inoculate the animal.

These are the essential experimental results, and they are extended by speculation and reasoning by analogy to practical ends. In the case of pregnancy, for example, it is said that since cells of the placental villi may break off and pass into the maternal blood stream, and as these cells are made up of proteins strange to the mother, protective ferments may be produced. But pregnancy may be diagnosed very early (in the first month) by the method, and it is obvious that the total weight of placental cells which may in this time get into the maternal blood stream is excessively small; it is, therefore, unreasonable to assume that this process can be solely responsible for the production of the protective ferments. Further, in some animals—e.g., the mare—the relationship of the placenta to the mother precludes the possibility of cells of the villi escaping into the blood stream. Hence a long theory, based on endless assumptions, of the relationship between the maternal and fœtal metabolism is elaborated to show how protective ferments may be produced in the mother by simple products of the fœtal metabolism.[7]

By a similar process of reasoning the experimental results already mentioned have been made a basis for researches on practically every subject within the scope of medical science. It is all the more important, therefore, to repeat and consider carefully the experiments by which the existence of specific protective ferments is considered to have been established.

The optical method of demonstrating the ferments does not, on the surface, appear to be very satisfactory. In the first place, the maximum rotations observed by Abderhalden are very small; in fact, only just outside the limits of error of the polariscope employed. In the second place, blood serum is chemically such a complex liquid that small changes in its optical activity are not necessarily significant. In this connexion it should be observed that Abderhalden states that blood serum may be kept indefinitely at 37° C. without any alteration in its optical activity, and it will be shown later that this statement comes into direct conflict with evidence obtained by the dialysis method. For these and other reasons the fundamental experiments with sugar as the substrate have not been repeated. In the last number but one of the *Journal of Biological Chemistry*[8] Hogan has published a paper on the parenteral utilisation of disaccharides, in which he comes to the conclusion that his data "yield no evidence whatever

that any enzyme or any useful protective factor hitherto described is regularly developed in the animal body by the parenteral introduction of lactose or sucrose."

Turning now to the part of the experimental work in which albumins are used as the substrate, it is essential first to refer to the dialysis method which was employed to demonstrate the ferments. The technique adopted has been described in a previous paper.[9] In order, however, to prevent any misunderstanding it is necessary to emphasise several parts of the process. In the first place asepticity was observed throughout. The dialysis sacs, elongated Petri dishes, and pipettes were sterilised in the autoclave and used immediately they were cool. The substrate was sterilised before use by boiling for several minutes in distilled water; the blood was drawn off aseptically into sterile centrifuge tubes, and after centrifuging the blood serum was pipetted off into fresh sterile tubes. The contents of the dialysis sacs and the distilled water in which they were placed were both covered with a layer of pure toluene. In testing the dialysate with ninhydrin 10 c.c. of the liquid, to which 0·2 c.c. of 1 per cent. ninhydrin solution had been added, was boiled over the Bunsen flame for one minute.

It is essential, according to Abderhalden, to use antigen and blood serum free of every trace of hæmoglobin. In experimental work with animals it is easy to obtain hæmoglobin-free serum. In order to do this the blood is collected quickly and centrifuged at 6000 revolutions per minute before coagulation occurs. The serum obtained is almost colourless and quite free of hæmoglobin. If the blood is allowed to coagulate before being centrifuged it is necessary to break up the clot, otherwise the serum will be mixed with fibrin in which red blood corpuscles are entangled. With human blood it is more difficult to obtain serum which is quite free of hæmoglobin owing to the fact that, as a rule, at least several hours elapse before the blood is centrifuged. The process by which the substrate may be obtained free of blood is fully described by Abderhalden in his book "Die Abwehrfermente."

Lange[2] states that in his experience the presence of hæmoglobin in the blood serum or in the substrate has no influence on the result of the reaction, and this opinion has been confirmed in the course of this work by numerous experiments. For example, a human placenta was taken and divided

TABLE I.

Sac.	Serum.	Substrate.	Ninhydrin test.	Sulphosalicylic acid test.
80	0·5 c.c.	HbO- free placenta.	–	–
81	1·0 ,,	,,	–	–
71	1·5 ,,	,,	+	–
74	0·5 ,,	Nil.	–	–
72	1·0 ,,	,,	–	–
82	1·5 ,,	,,	(+)	–
70	0·5 ,,	Bloody placenta.	–	–
83	1·0 ,,	,,	–	–
75	1·5 ,,	,,	+	–

into two parts, one of which was washed free of blood and prepared according to Abderhalden's directions, the other being boiled at once. Two specimens of placental substrate were thus obtained, the one white and free of hæmoglobin, the other dark brown owing to the presence of altered blood. Blood was now obtained from a woman in labour and the experiment described in Table I. carried out.

The reverse experiment, in which hæmoglobin-free blood serum is obtained and divided into two parts, hæmoglobin being added to one part and both now incubated with and without placenta, was also performed. In this case also the presence of hæmoglobin exerted no influence on the reaction. Similar results were obtained with the blood and various substrates of the dog and rabbit. These experiments, though of the nature of preliminary investigations, were not carried out until a considerable proportion of the work described in this paper had been completed. Consequently in all the experiments to be described it is to be assumed that, unless stated to the contrary, the blood serum and substrate were hæmoglobin-free.

Aberhalden's experiments, on which the whole theory of protective ferments is based, were repeated in the following manner.

Half a dozen large healthy rabbits were taken, and the blood serum of each animal was allowed to act on coagulated egg albumin. The result of each experiment was negative, as the accompanying example shows. (Table II.)

TABLE II.

Sac.	Serum.	Saline.	Substrate.	Ninhydrin test.	Sulphosalicylic acid test.
81	1·0 c.c.	1·0 c.c.	Egg white.	–	–
82	1·5 ,,	0·5 ,,	,,	+	–
80	2·0 ,,	0	,,	++	(?)
76	1·0 ,,	1·0 c.c.	Nil.	–	–
73	1·5 ,,	0·5 ,,	,,	+	–
77	2·0 ,,	0	,,	++	(?)

Thus the serum is without action on coagulated egg white. Following Abderhalden's method of procedure the rabbits were now injected intravenously (the second injection two days after the first, and the third one day after the second) three times with egg albumin diluted with normal saline. The dose administered on each occasion was 2 c.c. of a 50 per cent. solution of albumin. The rabbits were bled as follows: 2 on the fourth day, 2 on the fifth, and 2 on the sixth day after the last injection. The sera obtained were tested against coagulated egg white, and in each case the result was negative. The accompanying table (No. III.) is typical:—

TABLE III.

Sac.	Serum.	Substrate.	Ninhydrin test.	Sulphosalicylic acid test.
76	0·5 c.c. rabbit No. 1	Egg white.	–	–
73	0·75 ,, ,, ,,	,,	(+)	–
72	1·0 ,, ,, ,,	,,	+	–
79	0·5 ,, ,, ,,	Nil.	–	–
83	0·75 ,, ,, ,,	,,	(+)	–
78	1·0 ,, ,, ,,	,,	+	–
71	0·5 c.c. rabbit No. 2	Egg white.	–	–
75	0·75 ,, ,, ,,	,,	(+)	–
82	1·0 ,, ,, ,,	,,	+	–
77	0·5 ,, ,, ,,	Nil.	–	–
80	0·75 ,, ,, ,,	,,	(+)	–
81	1·0 ,, ,, ,,	,,	+	–

A similar series of experiments was carried out, inoculating other sets of rabbits subcutaneously and intraperitoneally, and with the same results. In no case was any evidence obtained of the production of a protective ferment. The blood serum

of the inoculated rabbits gave the precipitin reaction against solutions of egg white, and in the three cases tested anaphylactic shock was induced.

It will be noticed that in the tests with serum alone a positive ninhydrin reaction, progressively stronger with increasing doses of serum, is obtained. This result may be due either to the presence of amino-acids in normal rabbit blood or to a production of these substances by an autolytic enzyme. Abderhalden has demonstrated that amino-acids in minute amounts are normally present in blood serum.[10] Working with very large quantities of blood—e.g., 50–100 litres—he was able to isolate glycocoll, alamin, prolin, leucin, &c., but owing to the energetic chemical methods employed there is a possibility that the amino-acids obtained were produced by the reagents used in the process. The question was therefore investigated by a new and simple method.

20 c.c. of blood were drawn from a rabbit's ear vein and rapidly centrifuged in order to obtain clear serum. The serum was pipetted off into a strong large sterile test-tube, which was immediately immersed in boiling water and kept there for 20 minutes in order to inactivate any enzymes which may be present, and to kill any organisms which may have contaminated the serum. The serum clotted, and a clear watery fluid separated. This fluid was pipetted off into sterile test-tubes, and again heated and then placed in two sacs and dialysed for 18 hours against 20 c.c. of distilled water in the usual way. The dialysates reacted faintly with ninhydrin and were negative to sulphosalicylic acid; it was therefore concluded that blood serum does normally contain amino-acids. The experiment was repeated twice with rabbit's serum and with dog's serum with the same results.

In order to determine whether the blood content of amino-acids is increased during digestion an experiment was carried out in which rabbits which had fasted for 24 hours, and rabbits which had received a meal of oats and green stuff within three hours of the experiment, were bled and equal volumes of the serum obtained were treated in the manner already indicated. The dialysate from the fasting animal's blood serum gave a slightly fainter tint than the other dialysate, and from this result it is probable, considering the quantities of serum used, that any increase in the amino-acid content of the blood after a meal is too small to be detected in 2 c.c. of serum. It is possible, of course, that in an animal like the rabbit, with a great length of intestine and a large cæcum almost invariably loaded with partially digested food, the difference between a fasting animal and one in a state of digestion is very small. It was very noticeable that the dialysate from the serum of the animal in a state of digestion gave a temporary red colour when boiled with ninhydrin, this being due, probably, to glucose.

A further experiment was made to determine the influence of a previous bleeding.

An animal was bled, and the serum obtained was sterilised as before and the clear watery fluid pipetted off, and after being heated placed in the ice chest. Four hours later the animal was again bled, and the same volume of serum obtained and heated in the water bath. The clear watery fluid was pipetted off, heated, cooled in the ice chest, and 5 c.c. placed in a dialysis sac and dialysed against 20 c.c. of distilled water. In the same way 5 c.c. of the watery fluid from the first bleeding was dialysed against 20 c.c. of distilled water. After 18 hours the dialysates were tested with ninhydrin, and the reaction obtained with the dialysate from the serum of the second bleeding was much deeper than the other.

It may be concluded that amino-acids are washed from the tissues by the fluids which flow into the vascular system after a bleeding. These results do not preclude the possibility of a ferment action taking place in normal unheated blood serum. Indeed, it was observed that the depth of the ninhydrin reactions with fluid from 10 c.c. of serum was not more than equal to that usually obtained in an ordinary experiment with 1 c.c. of serum. In order to test for an enzyme action the following experiments were made.

An animal was bled aseptically, at least 30 c.c. of blood being taken, the blood immediately centrifuged, and the clear, watery, hæmoglobin-free serum was pipetted off into a sterile test tube. Into each of half-a-dozen or more sterile dialysis sacs 2 c.c. of blood serum was placed, and the sacs dialysed at different temperatures for 18 hours against distilled water. The temperatures chosen were as nearly as possible as follows: 5° (in chest), 20°, 30°, 40°, 50°, and 60° C. It was not always possible to set the baths at exactly these temperatures, but practically the temperatures employed were round about those stated. The baths used maintain the temperatures at which they are set to within half a degree during the 18 hours of the experiment.

The dialysates were tested in the usual way with ninhydrin, and the tints obtained gradually increased up to 40° C. and then diminished at the higher temperatures. The maximum was, in every experiment but one, round about 40° C. The results were compared by the method of dilution already described,[11] and the dilution numbers plotted against the temperatures as shown in the curves below. The following are examples of the experiments:—

1. A dog was bled and the serum obtained by centrifugalisation. In order to be quite certain of the sterility of the serum it was filtered through a Berkefeld filter. The accompanying experiment was carried out (Table IV.). The

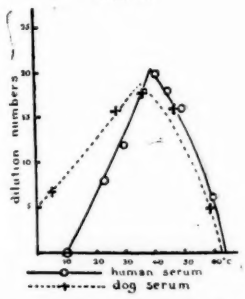
TABLE IV.

Sac.	Serum.	Temperature of incubation.	Duration of incubation.	Ninhydrin tests.	Dilution numbers.	S.S.A. test.
2	2 c.c.	4·5°	18 hours.	+	0·7 c.c.	–
32	,,	27·1°	,,	++	1·6 ,,	–
1	,,	36°	,,	+++	1·8 ,,	–
13	,,	47°	,,	++	1·65 ,,	–
5	,,	52°	,,	+(+)	1·4 ,,	–
12	,,	58°	,,	+	0·5 ,,	–

S.S.A. test = sulphosalicylic acid test.

curve for the dilution numbers is given in Fig. 1. From this experiment, in which in addition to using toluene every precaution was taken to exclude organisms, it is clear that an autolytic enzyme has been active.

FIG. 1.



The dotted line shows the gradation in the depth of the ninhydrin reaction obtained with dog serum incubated at different temperatures. The dilution numbers give the volume of water added to 1 c.c. to bring the tint of the liquid to the degree of faintness of the weakest reaction.

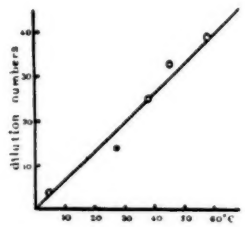
2. The curve (Fig. 2) for the dialysis of a solution of peptone was obtained by dissolving 0·4 g. of Witte's peptone in 20c. c. of distilled water, and dialysing at different

temperatures 2 c.c. of the solution against 20 c.c. of water thus (Table V.):—

TABLE V.

Sac.	Temperature.	Duration of dialysis.	Ninhydrin test.	Dilution numbers.
13	4·5°	18 hours.	+	0·3 c.c.
5	27°	,,	++	1·4 ,,
2	38°	,,	+++	2·5 ,,
32	45°	,,	++++	3·3 ,,
12	55°	,,	+++++	3·5 ,,
1	58°	,,	++++++	3·9 ,,

FIG. 2.



Shows the effect of increasing temperatures on the dialysis of a dilute solution of Witte's peptone.

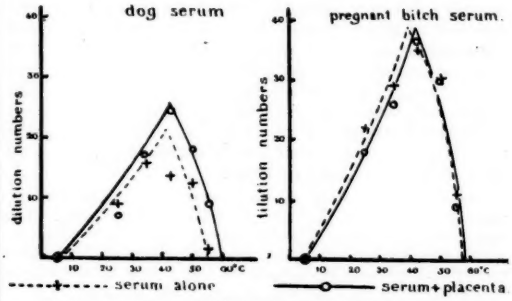
3. A bitch, three weeks pregnant, and a dog were bled and sera obtained. Aseptic precautions were taken, but the serum was not passed through a Berkefeld filter. The following tests were made (Table VI.). The curve is shown in Fig. 3.

TABLE VI.

Sac.	Serum.	Substrate.	Temperature.	Ninhydrin test.	Dilution numbers	S.S.A. test.
16	2 c.c. dog serum.	Dog placenta.	5° C.	(+)	0 c.c.	–
112	,,	,,	25°	+	0·7 ,,	–
42	,,	,,	34·5°	++	1·7 ,,	–
20	,,	,,	42·5°	+++	2·4 ,,	(+)
27	,,	,,	50°	++	1·8 ,,	–
4	,,	,,	55°	+	0·2 ,,	–
7	,,	Nil.	5°	(+)	0 ,,	(+)
117	,,	,,	25°	+	0·8 ,,	–
43	,,	,,	34·5°	++	1·6 ,,	–
116	,,	,,	42·5°	++	1·4 ,,	–
113	,,	,,	50°	++	1·3 ,,	–
115	,,	,,	55°	+	0·2 ,,	–
24	2 c.c. bitch serum.	Dog placenta.	5°	(+)	0 ,,	–
25	,,	,,	25°	++	1·8 ,,	–
28	,,	,,	34·5°	+++	2·6 ,,	–
9	,,	,,	42·5°	++++	3·7 ,,	–
1	,,	,,	50°	+++	3·0 ,,	–
40	,,	,,	55°	+	0·9 ,,	–
26	,,	Nil.	5°	(+)	0 ,,	–
36	,,	,,	25°	++	2·2 ,,	–
12	,,	,,	34·5°	+++	2·9 ,,	–
13	,,	,,	42·5°	+++	3·5 ,,	(+)
5	,,	,,	50°	+++	3·0 ,,	–
2	,,	,,	55°	+(+)	1·1 ,,	–

It will be noticed from the curves (Fig. 3) that: (1) There is no evidence of digestion of the substrate either by the serum from the pregnant bitch or by that from the dog; (2) the serum from the bitch yielded a greater amount of amino-acids than that from the dog; and (3) the curve for dog serum alone is distinctly more irregular and rises to a smaller height than the curve for dog serum plus placenta. This is due to the fact, as has been shown in the previous paper,[9] that sacs 117, 116, 113, and 115 were made at a later date than the sacs used in the rest of the experiments (except sac 112), and had been autoclaved fewer times. In

FIG. 3.



Showing that no degradation of placental tissue occurs either with dog or with pregnant bitch serum.

connexion with (2) above, it may be stated that my colleague, Dr. Compton, estimated the content in the ferment maltase of both these sera and found a difference corresponding to that noted above. In view of the findings of Bertrand and Compton[11] the agreement between the maltase and proteolytic ferments in the two lots of serum is of considerable interest.

4. Blood serum of rabbits was examined in the same way with similar results. A normal Belgian hare was starved for 26 hours and then bled; the blood was centrifuged and the clear, hæmoglobin-free serum pipetted off. The serum was divided into two parts, to one of which 0·5 c.c. of hæmolysed red blood corpuscles was added. The sera were now filtered through separate Berkefeld candles and the following experiment carried out (Table VII.).

TABLE VII.

Sac.	Serum.	Temperature.	Ninhydrin test.	S.S.A. test.
78	1 c.c. of HbO-free.	13·5°	–	–
80	,,	28·5°	++	–
83	,,	38·5°	+	–
79	,,	41·0°	–	–
73	,,	50·5°	–	–
82	,,	61·0°	–	–
76	1 c.c. containing HbO.	13·5°	–	–
81	,,	28·5°	++	–
77	,,	38·5°	+	–
74	,,	41·0°	–	–
72	,,	50·5°	–	–
75	,,	61·0°	–	–

It was not possible to obtain dilution numbers. The optimum temperature is here about 30° C.

5. About 40 c.c. of blood was drawn from the median cephalic vein of a healthy man (B.R.G.R.) and hæmoglobin-free, yellowish serum obtained. This was dialysed in lots of 2 c.c. against water at different temperatures for 18 hours (Table VIII.). Fig. 1 shows the curve. The double dose of ninhydrin is required owing to the fact that human serum yields, dose for dose, a smaller amount of

dialysable ninhydrin-reacting substances than the serum of the dog, the rabbit, the guinea-pig, or rat.

TABLE VIII.

Sac.	Serum.	Temperature.	Ninhydrin test. (Dose 0·4 c.c.)	Dilution numbers.	S.S.A. test.
98	2 c.c.	10°	+	0 c.c.	–
84	,,	23°	++	0·8 ,,	–
85	,,	30°	+++	1·2 ,,	–
90	,,	41°	++++	2·0 ,,	–
83	,,	45°	+++ (+)	1·8 ,,	–
86	,,	50°	+++	1·6 ,,	–
97	,,	60°	++	0·6 ,,	–

These results enable one to conclude that an autolytic ferment exists in the blood serum of rabbits, dogs, and human beings, and that it is responsible for some of the amino-acids indicated by the ninhydrin test. It does not follow, however, that it is impossible to diagnose pregnancy by Abderhalden's method. This requires to be tested directly, and for this purpose it was determined to use animal material owing to the ease with which blood serum can be obtained and male controls set up. Rabbits and dogs were tested. Blood was obtained from female animals both during the early days of pregnancy and immediately before or during delivery. In every case blood serum from a male was used as control. Altogether over 20 tests were made, and the results obtained were concordant and invariably negative, as the following examples illustrate:

A pregnant rabbit and a buck were starved 18 hours and then bled. The serum was filtered through unglazed porcelain and the following tests made (Table IX.):—

TABLE IX.

Sac.	Serum.	Substrate.	Ninhydrin test.	S.S.A. test.
21	½ c.c. doe.	Nil.	–	–
2	1 ,, ,,	,,	–	–
32	1½ ,, ,,	,,	+	–
12	2 ,, ,,	,,	++	–
5	½ ,, ,,	Rabbit placenta.	–	–
4	1 ,, ,,	,,	–	–
20	1½ ,, ,,	,,	+	–
27	2 ,, ,,	,,	++	–
13	½ c.c. buck.	Nil.	–	–
16	1 ,, ,,	,,	–	–
14	1½ ,, ,,	,,	+	–
43	2 ,, ,,	,,	++	–
7	½ ,, ,,	Rabbit placenta.	–	–
22	1 ,, ,,	,,	–	–
42	1½ ,, ,,	,,	+	–
25	2 ,, ,,	,,	++	–

Similar experiments, in which, however, the blood serum was not filtered, gave the same result. An example of a test with dog serum and dog placenta has already been given.

The difficulty of obtaining blood serum from human patients for the purpose of experimental work is very great, and renders it practically impossible to test the method as thoroughly as has been done for animals. It was, however, essential to make some experiments, and this was rendered possible by the kindness of Dr. Kettle, of St. Mary's Hospital, who procured four samples of blood, obtained during delivery. As a control to these tests in one experiment the blood serum of a healthy adult male was used. In each test (including that with serum from male) it was found that the ninhydrin reaction of the dialysates of serum plus placenta was deeper than in the case of the dialysates from serum alone. The results here are therefore quite different from those already detailed above. The serum (from male and female) does break down placenta protein or in some way liberate amino-acids. But since this result had already been obtained in connexion with tests in cases of cancer in animals to be described later, it was decided, in spite of the small number of cases examined, not to continue the work.

The following example is typical. Blood obtained during labour was centrifuged and the serum, yellow in colour but free of hæmoglobin, was pipetted off (Table X.).

TABLE X.

Sac.	Serum.	Substrate.	Ninhydrin test.	S.S.A. test.
85	1 c.c. from woman on delivery.	Human placenta.	–	–
86	2 ,, ,, ,,	,,	++	–
84	1 ,, ,, ,,	Nil.	–	–
100	2 ,, ,, ,,	,,	(+)	–
98	1 c.c. male serum.	Human placenta.	–	–
90	2 ,, ,,	,,	++	–
97	1 ,, ,,	Nil.	–	–
84	2 ,, ,,	,,	(+)	–

In the published work dealing with the diagnosis of cancer by this method human material exclusively has been used. Here, again, the difficulty of providing sufficient controls has not been met. Where animal material is employed the difficulty does not arise. The following tables illustrate the results obtained in numerous experiments with rats, guinea-pigs, and rabbits.

1. Nine rats bearing tumours—rat tumour 9—which were growing progressively were starved for 20 hours and then bled and the blood centrifuged. The serum obtained was free of hæmoglobin, pale yellow in colour and clear. (Table XI.)

TABLE XI.

Sac.	Serum.	Substrate.	Ninhydrin test.	S.S.A. test.
116	0·65 c.c.	Rat tumour 9.	(+)	–
117	1·15 ,,	,,	+++	–
113	1·55 ,,	,,	++++	–
114	0·65 ,,	Nil.	?	–
112	1·15 ,,	,,	+	–
115	1·55 ,,	,,	++	–

Incubated 20 hours.

2. Five normal rats were starved for 20 hours, bled, and serum obtained (Table XII.). Incubated 20¼ hours. The same dialysing sacs were used as in the preceding experiment and in the same order.

TABLE XII.

Sac.	Serum.	Substrate.	Ninhydrin test.	S.S.A. test.
116	1·0 c.c.	Rat tumour 9	++	–
117	1·5 ,,	,,	++++	–
113	2·0 ,,	,,	++++++	–
114	1·0 ,,	Nil.	+	–
112	1·5 ,,	,,	++	–
115	2·0 ,,	,,	+++	–

3. Two rabbits, one a normal buck and the second a doe with an absorbing tumour, decreasing in 49 days from a size of 2¾ × 2½ inches to a size of 1 × 1½ inches at the time of the experiment, were starved for 18 hours and then bled. The sera were both free of hæmoglobin; the normal serum was clear, that obtained from the tumour-bearing animal was opalescent. (Table XIII.) It will be observed

TABLE XIII.

Sac.	Serum.	Saline.	Substrate.	Ninhydrin test.	S.S.A. test.
80	0·5 c.c. tumour animal.	1·0 c.c.	Rabbit tumour.	(+)	–
76	0·5 ,, ,, ,,	1·0 ,,	,,	(+)	–
70	1·0 ,, ,, ,,	0·5 ,,	,,	++(+)	–
82	1·5 ,, ,, ,,	0 ,,	,,	++++(+)	–
83	0·5 ,, ,, ,,	1·0 ,,	Nil.	–	–
74	1·0 ,, ,, ,,	0·5 ,,	,,	++	–
73	1·5 ,, ,, ,,	0 ,,	,,	++++	–
81	0·5 c.c. normal animal.	1·0 c.c.	Rabbit tumour.	–	–
75	1·0 ,, ,, ,,	0·5 ,,	,,	+	–
79	1·5 ,, ,, ,,	0 ,,	,,	++	–
71	0·5 ,, ,, ,,	1·0 ,,	Nil.	–	–
72	1·0 ,, ,, ,,	0·5 ,,	,,	(+)	–
77	1·5 ,, ,, ,,	0 ,,	,,	+	–

that though the dialysates from tumour serum reacted to ninhydrin more strongly than the dialysates of normal serum, yet the differences between serum alone and serum plus substrate corresponded in the two sets of the experiment.

4. A guinea-pig tumour was washed free of hæmoglobin until the tissue was white, and was then extracted with chloroform to remove the large amount of fat usually found in this tumour. The product was then boiled in distilled water acidified with acetic acid, and again in distilled water until the water failed to react with ninhydrin. A guinea-pig bearing a tumour and a normal guinea-pig were bled from the heart and sera obtained. The animals were not previously starved. (Table XIV.) In this experiment

TABLE XIV.

Sac	Serum.	Substrate.	Saline.	Ninhydrin test.	S.S.A. test.
72	0·5 c.c. normal animal.	Guinea-pig tumour.	0·5 c.c.	–	–
74	0·75 ,, ,, ,,	,,	0·25 ,,	++	–
71	1·0 ,, ,, ,,	,,	0	++++	–
83	0·5 ,, ,, ,,	Nil.	0·5 c.c.	–	–
73	0·75 ,, ,, ,,	,,	0·25 ,,	–	–
80	1·0 ,, ,, ,,	,,	0	+	–
76	0·5 c.c. tumour animal.	Guinea-pig tumour.	0·5 c.c.	–	–
82	0·75 ,, ,, ,,	,,	0·25 ,,	+	–
70	1·0 ,, ,, ,,	,,	0	++	–
77	0·5 ,, ,, ,,	Nil.	0·5 c.c.	–	–
79	0·75 ,, ,, ,,	,,	0·25 ,,	–	–
75	1·0 ,, ,, ,,	,,	0	+	–

Incubated 21 hours.

the reverse of what was shown in the last experiment is obtained; the serum of the normal animal produced a greater ninhydrin reaction than the tumour serum, but again in both sets of tests there is an indication of a degradation of tumour protein or of some physical action liberating amino-acids.

5. Two guinea-pigs were inoculated in the right axilla with an emulsion of mouse tumour 63; the dose in each case was 0·5 c.c. Sixteen days later these animals and two normal guinea-pigs were bled, and the sera allowed to act on mouse tumour 63 as substrate as indicated. (Table XV.)

TABLE XV.

Sac.	Serum.	Substrate.	Ninhydrin test.	S.S.A. test.
4	0·5 c.c. immune serum.	Tumour 63.	–	–
5	1·0 ,, ,,	,,	+++	–
24	0·5 ,, ,,	Nil.	–	–
40	1·0 ,, ,,	,,	++	–
20	0·5 c.c. normal serum.	Tumour 63.	(+)	–
1	1·0 ,, ,,	,,	+++	–
21	0·5 ,, ,,	Nil.	–	–
9	1·0 ,, ,,	,,	+(+)	–

Incubated 19 hours.

Up to the present it has not been possible to obtain materials necessary to carry out similar experiments in cases of cancer in the human subject.

Results and Conclusions.

1. It was found impossible to cause the production in rabbits of a ferment which digests coagulated egg white by the injection subcutaneously, intraperitoneally, or intravenously of raw egg white.

2. A minute quantity of amino-acids is present in 10 c.c. of blood serum of rabbits and dogs, and it was found (in rabbits) that after a bleeding these substances are increased in amount.

3. An autolytic ferment is found in the blood serum of rabbits, dogs, and in human serum.

4. The serum of the pregnant rabbit is unable to break down rabbit placenta, and the serum of the pregnant bitch is unable to break down dog placenta. Human blood serum from the pregnant female and from the healthy male, incubated with human placenta, produced by chemical or physical action amino-acids.

5. Rat blood serum ("normal" and "tumour") breaks down rat tumour (J. R. S. & Rat 9). Guinea-pig serum ("normal" and "tumour") breaks down guinea-pig tumour and mouse tumour 63. The blood serum of the guinea-pig was not rendered more active in this property by a previous inoculation of the animal with mouse tumour 63.

The method devised by Abderhalden, even with the technical improvements described, is thus seen to be inadequate to distinguish normal from pregnant or cancerous sera. The fundamental experiments adduced by Abderhalden do not, on repetition, give the results stated by him, and a proteolytic ferment normally present in the serum of mammals acting on tissue substrates of varying lability, prepared in accordance with his directions, in all probability accounts for his results and their confirmation by others.

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ELECTROTHERAPY AT A BASE HOSPITAL.

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VERY little attention has hitherto been drawn to the value of electrotherapy in the treatment of the sick and wounded in war time. The only published references to this subject of which I am aware occur in a paper, "Le Service de Physiothérapie de l'Hôpital Militaire du Dey à Alger," by Dr. Hertz, Médecin Major de 1re Classe,[1] and in a paper entitled "La Physiothérapie des Blessés de Guerre," by M. Miramond de Laroquette.[2] Both these papers are concerned with the work at the military base hospital at Dey in Algeria, where a department of physiotherapy had been established to meet the needs of the wounded soldiers during the war in Morocco. Before reaching this department the primary lesions of the soldiers had been cured, and the department was solely concerned with the secondary troubles, often very severe, such as: paresis and paralysis following on nerve lesions, 16; ankylosis or articular stiffness, 43; functional incapacity or atrophy, 3; total, 62.

In the 41 cases in which a definite result was obtained there was a complete cure in 51 per cent., marked improvement in 24 per cent., and no result in 24 per cent. Of the remaining cases 8 were invalided out of the service and 3 were placed on half pay. The writers claim that without the aid of physiotherapy the number of those permanently disabled and in receipt of State pensions would undoubtedly have been much increased. The methods employed were, in the cases of neuritis and wasting, the continuous current of high intensity with long séances, and sometimes in addition a current of rhythmically interrupted galvanism. For the arthritic lesions radiant heat and mechanotherapy were used. The chronic effusions were treated by radiotherapy, in pastille doses, every fortnight.

At the Radcliffe Infirmary, which forms one of the subsidiary hospitals attached to the Third Southern General Hospital, a very complete electrical installation has recently been added. The installation comprises Nagelschmidt's diathermy apparatus with a high-frequency attachment, a powerful American Baker 8-16 plate static machine, a Bergonié apparatus for obtaining electrically provoked exercises, a 500 candle-power leucodescent lamp for radiant heat, an electric light bath of 48 incandescent and four arc lamps, a Krohmeyer mercury vapour quartz lamp, two pantostats, and batteries, &c., for rhythmically interrupted and reversed currents.

Of the 78 cases which have already been electrically treated 31 have been cases of frost-bite. Of these 24 have been discharged cured and 7 remain under treatment. (See Table). It is not suggested that these cures would not have occurred under other forms of treatment, or perhaps without any treatment, or even in spite of treatment. But it is claimed that by adopting electrical methods the most acute pain is speedily relieved, the stasis and swelling of the affected parts are reduced, the vitality of the tissues is increased, and in the necrotic cases the tissues are kept dry and aseptic, whilst separation is hastened by the increased hyperæmia which follows the application of the treatment.

In frost-bite cases the form of electrical treatment is selected on the following principles. If the pain is very severe diathermy is found to give the best results. When the pain is very acute the treatment is commenced as soon as possible after the patient's arrival at the hospital, and in the more severe cases two treatments are given daily. In cases of slight frost-bite electrical treatment is not usually given, any slight pain which may exist usually subsiding with one or two days' rest and warmth; occasionally, however, cases with no pain on admission develop a neuritis of the feet requiring electrical treatment a few days after admission. Cases which have lost sensation to heat are not suitable for diathermy, as there is a risk of the heat blistering them.

Table showing the Number of Patients Treated, the Methods of Treatment adopted, and the Results to the Middle of January.

Nature of complaint and number of cases.	Method of treatment.					Result.			
	Diathermy.	Morton wave current.	Static breeze.	High-frequency vacuum tube.	Galvanism (continuous, interrupted, and reversed current), faradism, ionisation, radiant heat.	Cured.	Improved.	Still under treatment.	Unimproved.
Frost-bite 31	20	1	12	7	1	24	—	7	—
Nerve lesions 22	11	2	3	2	11	7	5	7	3
Rheumatism, sciatica, neuritis 10	3	5	—	—	2	3	2	4	1
Stiff joints, synovitis 8	1	6	1	—	3	3	1	4	—
Strain of muscles 4	2	2	—	—	—	3	1	—	—
Eczema of leg... ... 1	—	—	1	—	—	1	—	—	—
Gout 1	—	—	—	—	1	—	1	—	—
Sycosis menti... ... 1	—	—	1	—	—	1	—	—	—
Totals 78	37	16	18	9	18	42	10	22	4

The following are the notes on a case in which diathermy was given in consequence of the pain disturbing the patient's sleep:—

CASE 1.—The patient was admitted on Dec. 17th, 1914. Was frost-bitten about the end of November, whilst on active service in the trenches. He stayed in the trenches till Dec. 11th, when he was unable to endure the pain in his feet and reported sick. The pain had continued every night, disturbing his sleep. On the night of Dec. 18th there was considerable pain. Dec. 19th: Diathermy 10 by 5 c.m. electrodes, 0·9 ampère, for 10 minutes yesterday. There has been no pain since treatment, and the patient had good night. Dec. 20th: Diathermy repeated on the 19th. There is now no pain in the feet. The patient can walk well and is recommended for sick furlough.

Captain C. A. Coventon has kindly supplied me with the following notes of two of his cases which were treated by diathermy for severe pain in the feet following frost-bite.

CASE 2.—The patient was admitted on Dec. 31st, 1914. Frost-bite in both feet; very painful, preventing sleep. On Jan. 1st, 1915, he was admitted to Radcliffe Infirmary for electrical treatment. On the 5th there was much less pain, he slept well, and there was more movement. On the 6th he continued to improve, was now quite well, and was discharged to sick furlough. The electrical treatment in this case seemed to cause immediate improvement, the pain ceased, and convalescence went on uninterruptedly.

[1] Archives de l'Electricité Médicale, March 18th, 1913.

[2] A paper read before the Congress of the French Association for the Advancement of Science held at Tunis in 1913.

CASE 3.—Frost-bite in both feet. The patient was admitted on Dec. 31st, 1914, with great pain necessitating morphia; there was no great discolouration and very slight swelling. On Jan. 3rd, 1915, he was admitted to Radcliffe Infirmary for treatment by Captain Turrell. On the 5th the pain was much less, he slept through the night, and had much more movement in the toes. On the 12th he continued to improve. On the 14th he was discharged to sick furlough. The remarks on the improvement of the other case equally apply to this one.

The so-called cases of trench pain or trench feet usually have no tissue destruction, no blebs, and not even any discolouration of the skin; they would appear to be due to acute neuritis of the feet excited by cold and exposure. The most acutely painful case we have treated was of this nature. The day after admission the patient was writhing in bed with agonising pain, his hands clenched, his face buried in the pillows, his face and feet covered with perspiration, there were no physical signs of any lesion. This patient was the only one we have treated who derived little or no benefit from diathermy; on the third day of his treatment the diathermy apparatus was temporarily out of order, so he was treated by the static breeze instead. He was immediately relieved, slept the whole of that night, and only had a slight recurrence of pain on the following day and this was relieved by a repetition of the treatment. The patient had no further relapse, and two days afterwards was walking about the ward. The other patients who have been treated by both methods have always stated that their pain has been more relieved by the diathermy than by the static. This patient was suffering from considerable nervous exhaustion, and probably a great part of the benefit he derived from the static breeze was due to the constitutional effect of this treatment.

Cases with no ulceration, but with blebs, and cases with loss of sensation to heat, we find respond best to the high-frequency vacuum tube. It is remarkable how quickly the blebs dry up under this form of treatment. Where there is ulceration and necrosis the static breeze with the patient negatively charged is the best form of treatment. The worst case of frost-bite which has been admitted to the hospital has been under treatment for about six weeks by this method. On admission the toes were hard, dry, and withered, the sole of the foot was covered by a large black bleb, on the dorsum of the foot a line of demarcation was already appearing about one inch from the base of the toes. The static breeze has been applied daily, and pain, whenever it has occurred, has been relieved by the treatment. The toes are now separating at the metatarso-phalangeal articulation. The granulations are very healthy in appearance, the wound has kept perfectly aseptic, and only on one occasion has the temperature risen to 99° F. The patient's general health has much improved. The œdema and induration on the dorsum of the foot have nearly disappeared.

The rationale of the static breeze in the treatment of frost-bite is apparent from the following description by Dr. Benham Snow of the therapeutic action of this modality: "The effect upon local stasis ..... where swelling and induration are present is to generally soften the tissues. This is due to the action of the discharges producing recurrent contractions of the tissues, thereby inducing an onward movement of the blood current through the vessels. Over superficial œdema ..... and where ecchymosis is present the effect of these applications systematically applied is remarkable in its results ..... . To ulcerated surfaces the application of these modalities is one of the most valuable in therapeutics. Applied over the indurated margin, where it has a positive effect in relieving stasis, it proves to be of the greatest value for the relief of those conditions. The circulation is restored throughout the zone of induration, which surrounds the ulcer, when a reparative process is immediately instituted."[3]

Several patients have been treated on account of very severe pain in the extremities following crushing or partial division of a nerve. It has been found that diathermy has always afforded marked relief; after the first treatment the pain is usually absent for four or five hours, and subsequent treatments result in a longer period of relief. In treating patients with very severe pain two applications of diathermy are administered daily, the second one being given as late as possible in the evening. Treated in this way patients who previously had only experienced brief relief from hypodermics of morphia sleep through the night without pain. Diathermy does not appear materially to shorten the period of convalescence in these cases, nor does it prevent the occurrence of trophic changes in the skin. In order to keep the patient free from pain the treatment has to be continued in some cases for two or three months. Often when the treatment is omitted for one day the patients complain that they have missed it and have had more pain.

In cases of nerve degeneration, if the mischief is slight, and the muscles react to faradism, the rhythmically reversed faradic current is used. Where the faradic reaction is lost, when there is no pain associated with the lesion, rhythmically reversed galvanism is used; when pain exists rhythmically interrupted galvanism is selected. For testing electrical reactions the condenser method is used and is found to be not only much quicker, but also to give more information in regard to the degree of nerve degeneration than the faradic and galvanic methods.

Sprains of muscles and synovitis of joints usually yield readily to the Morton wave static current, and the patient's stay in hospital is generally materially shortened by this treatment. The Morton wave current, either alone or in association with ionic medication, is used for the treatment of stiff joints.

The following interesting case of "spinal concussion" speedily yielded to the persuasive influence of Bergonié's machine for electrically provoked exercises. The rapid cure will probably be attributed to electrical suggestion, but in view of the vigour and amplitude of the muscular contractions excited by this apparatus "electrical demonstration" might be a better term.

CASE 4.—The patient, whilst serving at the front, was driving an ammunition wagon when a shell exploded under the wagon, killing one horse and severely wounding the other. The patient states that he was blown several feet into the air, and on falling dragged himself to the shelter of a hedge, where he remained all night. The following morning he could neither walk nor stand. On being taken to the medical officer the patient states that pins were pushed into both his legs without producing any sensation. On admission to the Third Southern General Hospital the patient appeared to be unable to draw up or move his legs or to stand up. The reflexes, sensation, and electrical reactions were normal. After a few days' rest in bed the patient could walk a few steps with assistance; he was then transferred to the Radcliffe Infirmary for electrical treatment. He was there treated

[3] Benham Snow High Potential and High Frequency Currents.

by electrically provoked exercise to the back (positive) and seat and thighs (negative). After the treatment the patient walked back to the ward by leaning on his wheeled chair; on the following day he walked to the electrical department with the aid of sticks, and after a repetition of the exercises he walked without assistance. On the third day the Morton wave current was applied to the back to clear up any remaining stiffness. No further treatment was required, and the patient was discharged on sick furlough.

Oxford.

FEAR AND DISEASE.

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TOXIN formation and the physical effect of toxins on the organism have been investigated both bacteriologically and dietetically as the cause of alimentary toxæmia, but we are still searching for that fundamental factor which allows the toxins to enter the blood in excessive quantities. I wish in this paper to put forward a hypothesis showing that this fundamental factor is, either partly or entirely, the direct result of a mental state. Dr. E. Mellanby raises this question when he says[1]:—

> The key to the situation is not held by a consideration of the bacteria of the intestine, nor of the chemical end-products of bacterial action, but rather by knowledge as to the normal methods of intestinal absorption, and more particularly of *the mechanism which prevents the passage of toxic substances across the mucous membrane* into the blood-stream. [Italics are mine.] The important question is: What is the cause in acute intestinal disturbance which brings about the breakdown of the defensive mechanism and allows the entry into the blood stream of toxic substances?

Dr. Murray Leslie seems to emphasise the same question when he says[2]:—

> It seems to me that sufficient stress has not been laid by previous speakers on the first factor—namely, the power of resistance on the part of the individual. It is true that reference has been made more than once to the fact that there is no necessary relationship between the amount of stasis and the degree of toxæmia. It is a matter of daily clinical observation that some persons can remain constipated for days, and even weeks, without apparently suffering any ill-effects, while in other instances the missing of the usual after-breakfast evacuation is invariably followed by headache, malaise, and inability for physical or mental exertion. Habit-tolerance, important though it may be, does not altogether account for such phenomena. There seem undoubtedly to be individual idiosyncrasies in respect of liability or resistance to toxæmia. The importance of the personal factor is exemplified by the well-known liability to bacterial invasion (including bacillus coli infection) of persons debilitated by injury, disease, over-fatigue, senile tissue degeneration, and other conditions leading to diminished vital resistance. Thus, for instance, it is known that shortly before death, when the vital protective forces are more or less in abeyance, the bacillus coli and other bacteria can freely pass through the intestinal mucous membrane and so into the circulation, while their toxins, not being neutralised or destroyed, accumulate in the circulating blood, and are no doubt responsible for many of the symptoms preceding dissolution, including ante-mortem pyrexia. Metchnikoff, indeed, believes that such absorption is the primary cause of death in most cases of senility, while any check to such absorption tends greatly to prolong life.

I am led to believe that, in some of these cases at least, nervous worry and all the emotions of an unplesant character, which I summarise generically as fear, are frequently a direct cause of alimentary toxæmia. Under the heading of "fear" I group broadly all such emotions as may contain an element of fear, such as anxiety, sorrow (a present loss, with fear of unhappiness in the future), overwork, anger (fear of another), exaggerated self-consciousness (fear of criticism), and pain, with its milder varieties of malaise and fatigue. Fear, in its generally accepted sense, or any excitement of an intense and unplesant nature, will commonly result in pallor with a feeling of faintness, while gastro-intestinal and vesical disturbances frequently ensue.

What are the physical causes of these effects and, if these causes persist, how is the organims affected? Compare the physical signs of fear with the results of shock. During abdominal operations shock effects are sometimes manifest and have often been described. Here the intestines become deeply injected, increase in volume, and may finally emerge from the body cavity. This distension is not due to the formation of gas; it is paralytic. The vaso-constrictor fibres of the splanchnic area are paralysed, and similarly those whose function is to maintain visceral tone. The face becomes pallid from the fact of the blood leaving the head to fill the vessels of the mesenteric area, blood pressure is lowered, and if shock is severe or continued the heart may stop. Short of this last, the following conditions, by reason of this dilatation, then obtain: (1) The absorption area of the inner intestinal surface is greatly increased; (2) the absorbing area of the blood-vessel wall is also increased; (3) the intestinal wall is thinned; (4) the walls of the blood-vessels are thinned; (5) they contain more blood; and (6) the blood stream is slowed, remaining longer in the absorption locality. Now we have on the one side of the intestinal wall blood (and lymph), and on the other side food and toxins. All these six factors tend, by the law of osmosis, to favour absorption of the intestinal contents into the blood. Is it not therefore probable that the same condition, to lesser degree but for longer duration, is induced by the shocks and resultant fear complexes incidental to most lives? Truly more food may at the same time be absorbed, but prematurely, in that case, further increasing the waste products to be afterwards eliminated. In any event, the toxin rather than the food question here holds the field.

I submit that the effect of fear will produce to some extent the same condition of intestinal collapse observed in surgical shock, slight possibly in degree, but sustained if the cause persists, and further that this loss of visceral tone tends, in the erect posture, to cause a drag on the visceral nerves (which cannot stretch as much as the gastric and intestinal muscles) and enhances the shock effect. We note that in order to diminish this factor and lessen the heart's work the subject prefers to lie down.

A patient describes how the sight of an accident affects his stomach. He develops wind immediately and his heart becomes embarrassed. He has an "all-gone" sensation in his abdomen. Here again one can only believe that a sudden paralysis of gastric and probably of intestinal muscular fibres allows the expansion of gases already present, and that dilated viscera now press on the heart. As the emotion passes the tone of his intestinal tract returns, and the expulsion of wind from the stomach often completes his recovery. A man bracing himself for an ordeal instinctively tightens his belt (girds up his loins). He feels a vague need of abdominal tone and has a sense of power (courage) when this manœuvre has been carried out. Atony and flatulence may, I believe, be

[1] Proceedings of the Royal Society of Medicine, 1913, vol. vi., p. 250.
[2] Ibid., p. 267.

mutually dependent on one another, and the presence of a gas-producing micro-organism favours absorption of visceral content by causing stretching and thinning of the gastric and intestinal walls. I deem it likely that flatulence can directly cause constipation, a lacuna of gas in an over-distended section of gut producing a block in the peristaltic wave.

Dryness of the mouth is another symptom of fear which is due, I suggest, to a general re-absorption of fluid from the tissues in a compensatory endeavour to help to fill the vascular area, which has become enlarged owing to splanchnic paralysis, and thus to restore the vital equilibrium by raising the lowered blood pressure. The disappearance of thirst after a saline injection for shock illustrates the effect of our artifice in the supplying of material to assist a natural process. The evacuation symptom, which frequently results from fear, may be due to a falling of fæces, on paralysis of the previously-emptied and contracted pelvic colon and rectum, to the point in the rectum where the evacuation reflex is obtained. Should the ileo-cæcal valve not be exempt from this suggested paralysis the small intestine, pouring liquid chyme into the colon, could give rise to the diarrhœa which is so often noted. A micturition reflex from fear may be explained in the same way. The sphincter is relaxed and escaping urine stimulates the reflex point in the posterior part of the urethra followed by urgent contraction of the bladder.

A nursing woman is said to produce toxic milk after an outburst of anger or receiving a fright. This circumstance would be difficult to account for otherwise than on some absorption theory like the above, and I suggest that abortion and miscarriage brought on by fear may be attributed to spasmodic uterine contraction (preceded possibly by an emotional paralysis of the os uteri, analogous to that suggested as affecting intestine and sphincter vesicæ) induced by toxic blood circulating in the uterine vessels or in the central nervous system.

Sea-sickness, it is well known, may be favoured and sometimes caused prematurely by fear.[3] In other cases I think it likely that the movement of the waves gives rise to shock with gastro-intestinal paralysis and toxæmia. Perhaps the vitiated blood stimulates the vomiting centre in the medulla. Dilated viscera now press on a heart already hampered by low blood pressure, until some temporary relief is obtained by vomiting or eructation. The practice of tightly binding the abdomen and the success as prophylactic of pituitary extract, which raises blood pressure and causes intestinal contraction, appear to support this view. Causes originating in the eye or semicircular canals could initiate the same sequence of events.

I believe that slow convalescence after any infective illness is, partly at any rate, due to delay in the recovery of visceral tone. Many a patient can, with precision, date his improvement from the moment when he made a resolution to get well. On the contrary, it is generally accepted that nervous people are much more liable to the diseases and disasters they fear than are those whose courage is at a high level. These results would seem to follow naturally, if we can accept the theory that fear induces atony with resulting toxæmia. Nervousness sufficient to elicit a blush contains a small element of fear, and here a vasomotor paralysis alone is effected while the gastro-intestinal tract escapes. After shock prolonged for a considerable time it is likely that the "defensive mechanism" will suffer, and that absorption will become habitual on the establishment of the vicious circle. For even when the fear is removed or diminished, the stomach and intestine, long fed by vitiated blood, may not at once recover their tone if the absorption of waste products has been overbalancing the eliminating capacity. Also the stomach tends to remain dilated and the colon to become the seat of accumulations consisting of fæces, possibly hardened, and mucus (which latter sometimes becomes organised into fibrous tissue) with sandy deposits of urates or phosphates. Now all these factors prevent the restoration of colonic tone and peristalsis and induce constipation. If, however, obvious constipation does not result the liquid content of the small intestine, propelled by the *vis a tergo*, can pass easily through a furred colon (to borrow a simile from a water pipe) in which circumferential layers of fæces move more and more slowly the nearer they lie to the wall of the colon till, at their periphery, stasis to a variable extent will obtain. Diarrhœa may characterise this condition.

The reason why some constipated persons are not obviously poisoned is, I believe, because (1) they are generally young and may have become constipated through habit and dietetic error, though other causes are not excluded; (2) their eliminating apparatus and toxin-destroying agents, working at high pressure, are still efficient; and (3) they have not yet lost intestinal tone, having no fear or anxiety state. Given time, their intestinal stasis, aided or not by fear, will eventually impair the tone of the hollow viscera and toxæmia will result. Tone is partly independent of peristalsis, though loss of the one may influence the other. In how many cases are people over 40 with constipation well?

So far I have mainly considered the circular muscular fibres of the hollow viscera. If these can be paralysed by fear, so, we may reasonably presume, can the longitudinal fibres and bands. The effect of this will be to lengthen the stomach and intestine, and, with the paralysis of the circular fibres, to increase their entire capacity in every dimension. Lengthening a hollow viscus, which is securely fixed at certain points, must infallibly produce sagging between those points, and this factor I consider at least as important as a prime cause of visceroptosis as that attributed by Sir Arbuthnot Lane to the weight of a loaded colon only. An atonic colon would become sooner and more heavily loaded than one tonically contracted. Thus ptosis would not be caused by, but would cause, stasis. Surgeons have noted a collapsed state of the appendix sometimes occurring when this organ is inflamed. Such an appendix would more readily admit and retain accumulations than one active in peristalsis and tone.

Mr. Lockhart Mummery describes a case which seems to bear out my theory of the relation of atony to toxæmia. He says[4]:—

> *The whole of his intestines were much dilated and extremely thin, but no other lesion was found.* [Italics are mine.] Appendicostomy was performed in the hope of clearing the toxins from the colon. The wound refused to heal at all, though it remained antiseptic, and in spite of treatment the dilatation of the bowel persisted. The bowels at last refused to act, even when the colon was filled with water, and although the small bowel was opened, he died, apparently from complete inactivity of the intestines and extreme toxæmia some three weeks later.

Acting on the belief that intestinal tone will check absorption, I have found, when an attack on the intestinal content has partly or entirely failed (often without this preliminary), that treatment

[3] K. W. Millican: THE LANCET, Dec. 31st, 1881, p. 1152.

[4] Proceedings of the Royal Society of Medicine, 1913, vol. vi., p. 181.

directed to the restoration of this tone has seemed to cut the vicious circle, presumably by allowing purer blood to repair damaged tissue or organs which by their inefficiency have shown themselves to constitute weak points. Particularly prominent are cases in which the nervous organisation has broken down and where I believe the fear, acting through the splanchnic nerves, has paralysed the intestine, causing absorption of toxins into the blood. This toxæmia affects the nerves, intensifying the symptoms and possibly establishing and confirming a fear-complex, while at the same time it impairs the vitality and contractile power of the visceral muscle. I will not attempt to apportion the improvement in these cases between the renewal of the patient's confidence and the arrest of toxic absorption. The two coöperate. Synchronising with this improvement increase of tone often becomes evident in a firmly contracted or contractile colon being now palpable instead of a gurgling unresponsive one, while the abdominal wall, once flabby or rigid and tender, has become supple and elastic. Prominence of gaseous distension has disappeared, and the abdominal muscles now exercise their function of holding the viscera back in position.

Loss of tone in voluntary muscles has been noted by various authorities, and Professor Geddes draws particular attention to the slackness in these cases of the abdominal muscles. This seems naturally to follow the general loss of control shown in all asthenic conditions, particularly noted in neurasthenia and psychasthenia. In this connexion the effect of continuous fear—i.e., worry—is easily explainable. Worry is a succession of fear states causing a loss of tone which becomes chronic. Further than this, we have to take into consideration the gradual establishment of a general affect tone, built up from successive experiences of a like nature. As the process of worry continues, the worry habit is formed and experiences of a neutral tone are coloured by the general outlook of the patient, converted into definite asthenic affects which aid the lowering effect on the mental energy, and lead to further loss of tone and the establishment of a psycho-physical vicious circle. In the development of atony in the alimentary tract (leading to visceroptosis) the fear or worry factor has often been a long time active before definite physical effects become evident. It follows, then, that the most rapid and efficient course is not always to direct the treatment to the physical condition alone, but to try at the same time to cut the psycho-physical vicious circle in another place by attacking it on the psychic as well as on the physical planes, and so to ease that tension of the mind which tends to keep up the condition of atony with its toxic sequelæ.

Thus, to summarise, apart from the consideration of the eliminating capacity, which may here be assumed to be more or less constant for the individual, toxæmia from the alimentary tract has always two factors—the chemical, comprising the toxins themselves, and the vital, dealing with the resisting power of the individual. This resisting power depends, I believe, on tone of the viscera and is powerfully influenced by the subject's state of mind. Further, this tone may well be part of a condition which should be normally shared by the entire musculature of the body. This explains adequately, I think, why the active are, as a class, more healthy than the sedentary.

I add a corollary to the foregoing. If fear can paralyse the hollow viscera, it must follow that happiness and courage can, to some extent at least, cause them to contract and check toxic absorption. This would constitute a link between mind and body by which the power of suggestion is transmitted to the organism. Thus may some of the cures by Christian and allied "sciences" be explained, and improvement in health follow improvement in circumstances, be these affairs of heart or pocket.

Harley-street, W.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

SECTION FOR THE STUDY OF DISEASE IN CHILDREN.

Exhibition of Cases and Specimens.

A MEETING of this section was held on Jan. 22nd, Mr. T. H. KELLOCK, the President, being in the chair.

Dr. F. D. SANER showed a case of Congenital Syphilis in a girl. The child was apparently quite healthy until just over two years ago, when she had some pain and stiffness in the left elbow and ankle-joint. Some months later a small hard lump appeared about the centre of the forehead, which gradually enlarged and finally ulcerated. The left leg became very deformed, and for nine months before admission the child was unable to walk. No specific treatment had been given until the child was admitted to hospital on Nov. 11th, 1914. She was then extremely wasted and anæmic, and did not eat or sleep. There was a large, circular, foul-smelling ulcer with a sloughy base in the centre of the forehead quite half as large again as the present condition. The eyes were almost closed from œdema of the upper lids. The liver and spleen were distinctly palpable. Wassermann's reaction was positive. Since admission hyd. c. creta 1 gr. had been given three times a day, and an inunction of ung. hydrarg. ½ dr. once daily. In addition, pot. iod. 5 gr. c inf. gentian co. ad 2 dr., t.d.s., had been given, and sanitas fomentations to the forehead. A hydrogen peroxide mouth-wash had been used, and the treatment had been very well borne. The child had gained 12 lb. in weight since admission, and her general condition was satisfactory.

Dr. H. W. BARBER and Dr. F. D. SANER showed a case of Enlarged Liver in a boy, admitted to hospital on Dec. 27th, 1914, for pain in the right side, which had only been present for a few days. The boy was of average development for his age, and there was no history of any previous illnesses. On examination the liver was considerably enlarged; on the right side its lower border nearly reached the iliac crest; in the mid-line its lower margin was just below the umbilicus, and it could be traced to the left costal margin at the level of the ninth costal cartilage. The spleen was not enlarged. The Wassermann reaction was positive. There was no eosinophilia.

Mr. SYDNEY STEPHENSON reported a case of Hæmatoma of the Lower Lid (an unusual manifestation of infantile scurvy). A female infant, aged 5 months, was brought to hospital on Jan. 7th. She had been well until the middle of last December, when she developed "thrush," diarrhœa, and vomiting, symptoms from which she made a fair recovery in the course of about a fortnight. On Jan. 3rd a small black spot or line was noticed in the skin of the right lower eyelid. There had been no injury to the parts. On the following morning the eyelid was swollen and discoloured. For the first two months of life the baby had been breast fed, and after that Swiss milk was given exclusively. Since recovery from the attack of December last nothing had been given in the way of food except albumin water. No patent foods had been used in bringing up the infant. On admission the right eye was completely closed by the pressure of the lower lid, which was enormously distended with blood. The swollen parts were almost chocolate-brown in colour. The upper eyelid was not swollen, and exhibited merely a few insignificant patches of cutaneous ecchymosis. The eyeball was not protruded. The cornea was clear. The temperature was 99° F. The child had some colour in her

cheeks, and although somewhat wasted (weight 11 lb. 6 oz.) yet looked tolerably well. There was no tenderness on handling and no swellings about the legs or arms. There were no teeth, and the gums were in excellent condition. A provisional diagnosis of infantile scurvy was made, and the child admitted as an in-patient. She was placed on equal parts of "raw" milk and water. One teaspoonful of raw meat juice was given every three hours, alternatively with a similar quantity of orange juice. The affected eyelid was treated with compresses of hydrogen peroxide. The improvement in the state of the eyelid was striking. Two days after admission the condition was less marked. A couple of days later the baby could open the eye somewhat, and seven days after admission the eye could be widely opened, and the lower lid, although blood-stained like a "black-eye," was not swollen. In fact, in the course of a single week under antiscorbutic diet changes had taken place that in ordinary cases would have been spread over three weeks or a month. The infant's general health, unfortunately, did not improve *pari passu* with the local condition, and the child died on Jan. 18th from pneumonia and pneumococcal meningitis.

Mr. SYDNEY STEPHENSON and Dr. SYDNEY A. OWEN showed a case of Polio-encephalitis Inferior of the Oculo-motor Type in a girl aged 8 years. She had gone to bed in her usual health, and the next morning "the eye was turned," and she complained of pain over her right brow. Examination three days later showed slight ptosis of the right eye which was deviated outwards and upwards. There was a defect in the downward and inward excursions of the eye. The secondary deviation was outwards and a little downwards. Diplopia was crossed, the false image being at a lower level than the true, its upper end inclined outwards. The signs therefore indicated a paresis of the inferior rectus of the right eye. The right pupil measured 6 5 mm. and the left 5 mm. The latter responded actively to light, but the former was sluggish. There were no other signs of nervous disease.

Dr. SHEFFIELD NEAVE showed a case of Infantile Paralysis with Excessive Knee-jerk in a boy aged 2 years. The right leg showed flaccid paralysis, deficient response to electrical stimuli, wasting of the calf muscles, excessive knee-jerk, and extensor plantar response.

Dr. J. D. ROLLESTON reported a case of Congenital Heart Disease and Ulcerative Sore Throat. A male infant, aged 11 months, was admitted to hospital on Dec. 6th, 1914, certified to be suffering from diphtheria, on the eleventh day of disease. The father had always been healthy, but the mother had been an in-patient at the Brompton Hospital on several occasions for rheumatism with cardiac complications. The child had always been delicate and blue from birth. Clubbing of the fingers had been noticed since he was aged 2 months. On admission the child appeared to be very ill. There were membrane on the tonsils, pillar, and uvula, and a profuse nasal discharge. The heart sounds were clear but rapid. There was a trace of albumin in the urine. A large dose of antitoxin was given on admission and on the following day. A few organisms resembling diphtheria bacilli were found in the cultures, but cocci were predominant. On Dec. 8th a loud systolic murmur was audible all over the præcordium. There was marked ulceration of both tonsils. No Vincent's organisms were found in the throat smears. The ulceration gradually spread over the uvula and palate. On the 13th stridor and a hoarse cough developed, and there was much difficulty in swallowing. The symptoms persisted, and the general condition became worse until death took place from bronchopneumonia on the 20th. The heart showed the following anomalies: (1) Transposition of the great arterial stems, the aorta arising from the infundibulum of the right ventricle and the pulmonary artery from the left ventricle; (2) marked deficiency of the interauricular septum, which was represented by a narrow band 1·5 cm. long by 0·5 cm. broad (the foramen primum lay anterior to it, and posteriorly there was a widely patent foramen ovale); (3) an interventricular foramen, 1·2 cm. in diameter, in the "undefended space"; and (4) stenosis and hypoplasia of the pulmonary artery, the valve of which had only two cusps. The fauces and larynx showed ulceration of the tonsils, frenum, epiglottis, right arytæno-epiglottidean fold, and deep ulceration of the laryngeal portion of the pharynx on each side, especially on the left, exposing the muscular tissue and eroding the thyroid cartilage.

Dr. J. PORTER PARKINSON showed a specimen of Acute Atrophy of the Liver. The patient, a girl aged 5½ years, had had jaundice for five weeks. At first the liver was enlarged, and had gradually got smaller till it could no longer be felt. The urine contained bile pigment and acetone, but no albumin, leucin, or tyrosin. Delirium set in and death took place. Post mortem the liver weighed 1¼ lb., was pale yellow and very friable. On section it showed yellow areas, between which were small dark red spots. The gall-bladder and ducts were normal. Microscopically, there was general staining with bile pigment. The cells were distended with fat, but the nuclei were well marked. There was no distension of the bile-ducts and no actual necrosis of the cells. No micro-organisms were found in the specimens.

Dr. E. B. GUNSON showed specimens from a case of Suprarenal Hæmorrhage in an infant. The child was first seen on the sixth day after birth. There was a slight discharge from the umbilicus, the cord having separated. On the eighth day the temperature rose suddenly to 102° F., and cellulitis of the forearm developed. The stools became frequent, loose, and offensive. The child was collapsed, and died on the ninth day, 30 hours after the onset of symptoms. Post mortem the right suprarenal was greatly enlarged, and on section was found to have been converted into an almost black hæmorrhagic pulp. The left suprarenal was similarly affected, but to a less extent. A culture from the heart's blood gave a pure growth of streptococcus. A Gram-stained preparation of the left suprarenal showed the presence both in the cortex and medulla of streptococci.

Dr. GUNSON also showed a photograph of a case of Purpura complicating diphtheria. The purpura appeared at the site of an antitoxin rash and persisted till death. Before death the purpuric patches on the cheeks and ears became confluent. Superficial ulceration occurred, but there was very little loss of substance. Hæmorrhages occurred into the gums, and an extensive subconjunctival hæmorrhage appeared in the right eye. There was old-standing constipation, the stools resulting from the administration of castor oil and turpentine being very copious and markedly offensive for many days. Palatal palsy, carditis with "cardiac paralysis," arthritis, and albuminuria developed before death on the twenty-eighth day.

Dr. F. J. POYNTON and Mr. T. T. HIGGINS showed specimens illustrating a Persistent Pharyngeal Rudiment, occurring in an infant aged 5 months. Some difficulty in swallowing, associated with coughing and occasional dyspnœa, had been noticed for five weeks. A pearly-white rounded polypoid tumour was discovered in the pharynx, and under anæsthesia was demonstrated to spring from the left supratonsillar fossa, being attached in this position by a narrow fibrous stalk. After removal it proved to contain a narrow bar of cartilage, embedded in fibrous connective tissue, exactly resembling subcutaneous tissue, and covered by perfectly formed skin.

SECTION OF DERMATOLOGY.

Exhibition of Cases.

A MEETING of this section was held on Jan. 21st, Dr. J. J. PRINGLE, the President, being in the chair.

The PRESIDENT showed a case of Pemphigus Vegetans in a soldier aged 28. The disease began in September, 1914, and presented the characteristic bullous lesions on the skin and mucous membranes in abundance and vegetative condylomatous lesions in the armpits. The serum obtained from the recent blebs was sterile, but pus infection rapidly ensued, and the case presented marked evidences of sepsis throughout its duration. Remarkable improvement had taken place under treatment by vaccines of four varieties of coliform bacilli found in the fæces and of staphylococci and bacillus proteus from his bullæ; but probably much of his improvement was due to prolonged baths and other local antiseptic measures.—Dr. G. PERNET commented on the unusually benign course of the disease, contrasting it with others he had observed.—Dr. A. WHITFIELD referred to a case of pemphigus vegetans in which the bullous element was very imperfectly developed.—Dr. J. H. SEQUEIRA related the history of a severe case of the disease which had apparently recovered despite his unfavourable prognosis; he discussed the relationship of the condition to dermatitis herpetiformis.—Dr. J. M. H. MACLEOD confirmed

the observation that the early bullous manifestations of the disease were sterile.—Dr. A. M. H. GRAY mentioned the recovery of a possible case of the disease, and the PRESIDENT replied.

Dr. PERNET showed a case of Erythema Centrifugum which corresponded to the disease originally described by Hebra as seborrhœa congestiva.

Dr. H. W. BARBER brought forward a case of Pityriasis Rubra Pilaris, typical as regards its elementary lesions and distribution on the hands, feet, scalp, and trunk, in a woman, aged 41, in the seventh month of pregnancy. She had previously given birth to seven children.—The PRESIDENT thought that the association of the skin disease with pregnancy was fortuitous.—The case was discussed by Dr. WHITFIELD and Dr. PERNET.

Dr. SEQUEIRA exhibited a case of Dry Gangrene of Several Toes of Obscure Etiology in an Infant.—Dr PERNET suggested the possibility of the existence of Raynaud's disease dependent upon congenital syphilis, and this view was emphasised by Dr. F. PARKES WEBER and Dr. A. DOUGLAS HEATH.—Dr. WHITFIELD and Dr. BARBER also discussed the case.—Dr. SEQUEIRA replied that the case would be further investigated as regards congenital syphilis, of which he saw no evidence.

Dr. MACLEOD presented a woman with Eczematoid Ringworm of the Hand, presumably contracted from her children, who were suffering from small-spore ringworm of the scalp. He had reason for thinking that the infection was originally of feline origin, and cited Dr. Colcott Fox's observations on the subject.—The PRESIDENT and Dr. SEQUEIRA referred to the frequent discovery of epidermophyton fungus in lesions of the hands, which without microscopic examination would have passed as dysidrosis or vesicular eczema.—Dr. S. E. DORE referred to the frequency of cat ringworm in this country as compared with its rarity in France.—Dr. PERNET alluded to a case of feline microsporon ringworm which he had reported some years ago.

Dr. SEQUEIRA showed a Bristle from a Hair-brush bearing numerous Ova of the Pig Louse (Hæmatopinus suis), which was, however, not communicable to man.

Dr. ALFRED EDDOWES brought forward a case of Recurrent Circinate Erythema in a child.

Mr. T. P. BEDDOES showed a case of Extreme Hyperidrosis of the Hands of lifelong duration in a young woman.—The PRESIDENT, Mr. H. C. SAMUEL, and Dr. SEQUEIRA discussed the case.

Dr. E. G. GRAHAM LITTLE showed the following cases: 1. A case of Typical Lichen Spinulosus in a child, which supported his contention that the disease had no relationship to lichen planus. 2. A case of Parapsoriasis en Plaques. 3. A case of Unusually Inflammatory Pityriasis Rosea.—Dr. SEQUEIRA and Dr. EDDOWES agreed as to the occurrence of an epidemic of pityriasis rosea at the present time, and the PRESIDENT, while agreeing with the exhibitor's diagnosis, pointed out the difficulty of differentiating it from acute seborrhœa of the body.

MEDICAL SOCIETY OF LONDON.

Radiography in its Relation to the Present War.

A MEETING of this society was held on Jan. 25th, Sir J. BLAND-SUTTON, the President, being in the chair.

Dr. W. IRONSIDE BRUCE demonstrated and read a paper on an X Ray Director for the Removal of Foreign Bodies in the Tissues, which will appear in an early issue of THE LANCET.—Sir J. MACKENZIE DAVIDSON complimented Dr. Ironside Bruce on his apparatus, describing it as ingenious and remarkably accurate.—Mr. DONALD J. ARMOUR said that he could bear out all that had been said with regard to its value.—Mr. S. MAYNARD SMITH said that he always used an X ray screen during the actual extraction of foreign bodies, and had never experienced any difficulty from the point of view of sepsis being introduced. He welcomed the improved method demonstrated by Dr. Ironside Bruce.

Sir JAMES MACKENZIE DAVIDSON gave an address on the Telephone Attachment in Surgery, and demonstrated the use of the telephonic probe. His address is published in full on p. 217 of our present issue.—Mr. ARMOUR described a case in which he had used this method for the removal of a piece of shrapnel which had lodged within the orbit. It was 3 mm. in width and lay 12 mm. from the surface. The operation, which might have been a difficult one, was thus rendered easy.

Dr. F. HOWARD HUMPHRIS exhibited lantern slides of Injuries occurring among the Wounded at the 3rd London General Hospital. Among the radiograms were some showing that bullets had penetrated through bone, producing little injury to it. Two other radiograms showed bullets lying against the pericardium. The patient, who had been wounded by one of these, had returned to the front with the bullet still *in situ*.

The meeting was adjourned until Feb. 22nd, when further contributions will be made by Dr. A. C. Jordan, Dr. G. Harrison Orton, Mr. S. Gilbert Scott, Dr. Stanley Melville, and Dr. Robert Knox.

LIVERPOOL MEDICAL INSTITUTION.

Pityriasis Rubra.—Treatment of Displacement of Uterus.—Incoördination of Function in Relation to Disease.

A MEETING of this society was held on Dec. 17th, 1914, Dr. E. W. HOPE, the President, being in the chair.

Dr. F. H. BARENDT read a note on Pityriasis Rubra and showed a patient. He referred to three cases, discussing one in detail.—The PRESIDENT and Dr. R. W. MACKENNA discussed the note, and Dr. BARENDT replied.

Dr. A. STOOKES described a new electro-cautery for intra-uterine work, and read a note on the Treatment of Displacement of the Uterus. He believed in the existence of discomfort in cases of uncomplicated retroversion, and he described several forms of operation.

Dr. C. J. MACALISTER submitted an interesting paper on Incoördination of Function in Relation to Disease. He defined the subject and then described the interdependence of the organic functions, showing that disease of one kind may produce symptoms referable to another. In his opinion gastric ulcer was possibly associated with defective chemical coördination due to the climacteric of puberty, Raynaud's symptoms being prodromal in nature. He instanced psychoses in children, which in his opinion depended upon the chemical incoördination. He gave several instances of marked improvement under thyroid.—The PRESIDENT emphasised the value of education as a therapeutic agent.—Major T. R. BRADSHAW, Captain W. B. WARRINGTON, and Dr. A. S. PARKINSON discussed the paper, and Dr. MACALISTER replied.

At the annual meeting of this society, held on Jan. 21st, the following list of office-bearers and members of council was adopted:—President: E. W. Hope. Vice-Presidents: R. J. M. Buchanan, Alexander Stookes, R. J. Hamilton, and W. J. Fleetwood. Treasurer: Llewellyn Morgan. General Secretary: Frank H. Barendt. Secretary of Ordinary Meetings: John Hay. Secretary of Pathological Meetings: D. Moore Alexander. Librarian: Nathan Raw. Editor of the Journal: R. W. Mackenna. Council: V. C. De Boinville, James Huskie, Robert Jones, W. McAfee, A. C. Ransome, J. H. Willett, Claude Rundle, Reginald T. Bailey, Thomas Guthrie, F. M. Gardner-Medwin, W. Allen Daley, W. C. Oram, and Gerald Wallace. Auditors: V. C. De Boinville and P. F. Tinne.

METROPOLITAN HOSPITAL SUNDAY FUND.—At a council meeting of this Fund held at the Mansion House on Jan. 20th, under the presidency of the Lord Mayor, the various committees were re-elected, with the addition of the Rev. Hardy Harwood to the distribution committee, the Rev. H. A. Hall to the general purposes committee, and Mr. John Robarts to the finance committee. Sir Ernest Tritton, Bart., was appointed vice-chairman of the Fund, and the honorary secretaries and the auditors were re-elected. During the course of the proceedings sympathetic reference was made to the death of Mr. Thomas Bryant, who had been a member of the council for 22 years, and on the motion of Sir Ernest Tritton it was unanimously agreed to send a letter of condolence to members of the family. In replying to a vote of thanks the Lord Mayor said that he would do everything possible to assist the Fund, which was one of the most excellent movements in the country.

Reviews and Notices of Books.

Tuberculosis of the Bones and Joints in Children.

By JOHN FRASER, M.D., Ch.M. Edin., F.R.C.S. Edin., Assistant Surgeon, Royal Hospital for Sick Children, Edinburgh. With 51 plates and 164 illustrations. London: Adam and Charles Black. 1914. Pp. 352. Price 15*s.* net.

Mr. John Fraser's monograph is inscribed to Mr. Harold Stiles. If it is thus to a certain extent "placed," it will be generally admitted that it is well placed; and at the same time there is internal evidence that the author has spared no pains to form an individual opinion upon theory and practice. Mr. Fraser is canny. His cautious "conclusions" on p. 91 as to the value of tuberculins in treatment might strike the vaccinist as an exercise in the gentle art of damning with faint praise. Throughout, too, there may be discerned a reserve in dogmatising which is natural enough when associated with such an extensive study of the literature as is implicit in the text, even if, in view of a modest disclaimer in the preface, it may not be deduced from the extensive and valuable bibliographies at the end of each section.

The book is divided into two main sections: "general," dealing with etiology and pathology, clinical features and diagnosis of bone and joint tuberculosis, X ray appearances, prognosis and the broad lines of treatment; and "special," dealing seriatim with regional lesions in their more particular aspects and detailed treatment. The special section is thoroughly well done, with a wide and at the same time a distinctive outlook, but there is little in it that may not be found in other recent works on the subject. It is the general section, and more particularly the extensive study of bone tuberculosis, its etiology, morbid anatomy, and histology, which will be read with attention by all interested. Mr. Fraser's arguments are rendered more cogent and lucid by the numerous and successful microphotographs and photographs. With the general lines of vascular access and spread and close dependence on the distribution of vessels most readers will be familiar and in agreement; whether the latter factor has quite the degree of dominance here accorded will need further consideration in relation to similar phenomena of the more acute infections. The footnote on p. 26, in which Mr. Fraser records a modification of his textual opinion as to the hypertrophic bone lesions of tuberculosis, is of great interest for several reasons: it indicates his frank attitude of scientific doubt; it hints at the probably not infrequent association of the syphilitic with the tuberculous virus, whether simultaneous or sequential; and it may lead to an inquiry whether the hypertrophic lesion may not be, at least very often, the indication of association of another organism—for example, the staphylococcus—and not the product of the tubercle bacillus alone. It was to be expected, but cannot be too often reiterated, that the bovine bacillus should be found responsible for a large proportion of the cases of infection in children—Mr. Fraser found 60 per cent. of a series of 70 examined bacteriologically; and that the milk-supply is to be held ever suspect. Hyperæmic treatment is praised somewhat lukewarmly, a distinction as to efficiency being drawn in favour of the upper as against the lower limb, and the positive statement is made that the formation of cold abscesses is hastened by it. With regard to aspiration of abscesses and the injection of medicaments, whilst the various methods are indicated the reader is left to deduce that the author either does not practise them or has no high opinion of their utility; his attitude is somewhat similar towards the employment of injections for sinuses.

The special section is uniformly good on conventional lines; here and there it is possible to pick holes—for example, in the paragraph "diagnosis," on p. 299, of dactylitis, but the faults are venial and the merits considerable. The whole monograph will repay reading and must prove of value both to students and surgeons of experience.

The Philosophy of Change: a Study of the Fundamental Principle of the Philosophy of Bergson.

By H. WILDON CARR. London: Macmillan and Co. 1914. Pp. 216. Price 6*s.* 8*d.* net.

THIS book is founded upon a course of lectures delivered by the author in the University of London. It deals, as the title indicates, with the philosophy of Bergson. It is, however, much more than a mere commentary upon that philosophy. The author's main preoccupation is with the relation of mind and body, matter and spirit; and it is this problem which he seeks to interpret in the light of what he calls the philosophy of change. The view now prevalent among physiologists is that which regards all conduct and activity as depending exclusively on the material processes taking place in the brain and nervous system. No active efficiency is attributed to mind, which is regarded as a mere phosphorescence, or "epiphenomenon," occurring in conjunction with certain cerebral processes, but having no power to affect their evolution in any way. This view is attacked by Mr. Carr. Although he is unable to offer any valid arguments against the all-sufficiency of cerebral processes in accounting for human activities—a theory which, indeed, is rapidly becoming an axiom of physiology—yet he does advance weighty reasons against the view that mind is a passive accompaniment of another order from the brain. The argument, which is of metaphysical character and too long to reproduce here, does not, however, seem to us to have any force against what is called the double-aspect theory—namely, that mental and cerebral processes are not two different things, but two different aspects of the same thing. This, as Mr. Carr is well aware, is much the most powerful position of the mechanists; and it would have been preferable if he had directed his analysis against that rather than against an older and less tenable hypothesis, already widely abandoned. What he does is to refute the earlier and more easily refuted theory, and then to announce that the more developed theory "comes to grief on the same rock"—a statement which many will regard as wholly unjustified.

As regards matter and spirit, Mr. Carr takes, of course, the Bergsonian view as to the special connexion of mind with time and of matter with space. "A simultaneous cross-section through space ..... would reveal all the matter existent in the universe, but would not reveal mind. On the other hand, a cross-section through time would reveal mind, but would not reveal body." It has often before been urged that Bergson's apotheosis of time—his view

that there is something profound and absolute in it, quite apart from the mere sequence of one moment upon another—is an empty simile, from which no genuine concept arises. Indeed, it is not possible to understand Bergson's theory unless we visualise time as though it were space, and the theory falls to the ground the moment we abstract from his conception of time those spatial attributes without which that conception could never have been attained. Mr. Carr, taking a cross-section through time, is clearly visualising, not time, but space; and what he and Bergson choose to call time is really a sort of hyperborean space conjured up by an alert imagination.

Whether or not we agree with Mr. Carr—and in philosophy that is largely a matter of temperament—we are bound to admit that his book is able, remarkably lucid, and conspicuous throughout for its sincerity and honesty of purpose. If it is true of philosophy, as Gibbon suggested, that "her gentle hand alone is able to eradicate from the human mind the latent and deadly principle of fanaticism," then we may affirm that Mr. Carr's book is wholly worthy of this exalted ideal. Especially at the present time we cordially wish it the wide success which it deserves.

The Book of Pharmacopœias and Unofficial Formularies.

By E. W. LUCAS, F.I.C., F.C.S., and H. B. STEVENS, F.I.C., F.C.S. London: J. and A. Churchill. 1915. Pp. 524. Price 7*s.* 6*d.* net.

THE compilation of this book must have entailed considerable labour and much industrious research. It is an attempt to present in a simple comparative form the formulas contained in the pharmacopœias of Great Britain, the United States, France, Germany, and Italy. It also includes copious extracts from the unofficial formularies of these countries, as well as from the pharmacopœias of the leading London hospitals. As a work of reference this book will certainly be of far more value to the dispensing and manufacturing chemist than to the medical man; by the former class many valuable suggestions may be gathered from a careful consideration of the reasons which determine the differences between the formulas of the various countries. It is to be feared, however, that prescribers, especially at the present time, may maintain the attitude of Gallio, and pass by numerous small points which might improve their prescriptions.

An initial difficulty was apparently experienced in the nomenclature, and the authors have wisely made the arrangement under the "commonly used Latin name," regardless of the question whether the name selected is that which is officially recognised in this country. Under the title a series of synonyms is placed, and here again there is no indication of the countries, if any, in which these synonyms are official. The geographical range of employment has to be gathered from the reader's ideas of foreign languages; the synonyms may be those familiar in this country, they may be alternative titles used to conceal the true composition, or they may be the official names from one or other of the foreign pharmacopœias to which reference is made. The actual comparison of the composition and mode of preparation is facilitated by arrangement in parallel columns under the headings of abbreviated titles of the source, while the process employed is shown by affixing an arbitrary letter, which is explained in an appendix. It is thus easy to see at a glance that extract of opium is of the same strength in the five pharmacopœias, that in all the same quantity of opium is used, but that in one instance the process of extraction differs from that adopted in the other four.

In a book published subsequent to the new British Pharmacopœia, it is to be regretted that the metric system has not been adopted; the authors state that the imperial system of weights and measures has been adhered to, since it is the system still in general use by medical men and pharmacists. It may be true that this procedure will save time and trouble involved in making the necessary calculations when a few ounces of any preparation are required, but the whole point of the introduction of the metric system seems to have been overlooked—viz., the facility of dealing with foreign prescriptions, which are invariably written in metric terms. The avoidance of the metric system is the more surprising since temperatures are expressed in degrees Centigrade, instead of Fahrenheit. Throughout the book, under sectional headings, there are numerous valuable directions about methods of preparation; these are most detailed in connexion with the extracts, which should be easy to prepare from the information afforded. For the tinctures the same amount of care has not been expended. Reference is made to the processes of solution, maceration, and percolation, but under the individual preparation we find no clue to the special process to be adopted, though the strength of alcohol is noted, and clear indication is given as to when the liquid should be weighed and when it should be measured. A materia medica table, consisting of a dozen pages, gives the French, German, or Italian names of plants or parts of plants, together with their English equivalents. These tables will save much trouble in enabling the pharmacist to identify strange names with familiar articles. Although considered by the authors to be a table of vegetable materia medica, it includes lard, honey, and leeches, but the foreign equivalents are so unlike the English terms that we ought not to cavil at finding them in such strange company.

Viewed as a whole this book is likely to be of great service to pharmacists, especially to those who are called upon to dispense foreign prescriptions. The probability of the early need of a new edition has led us to indicate directions in which it may be improved by the removal of minor blemishes or by the addition of further detail.

Physiological Principles in Treatment.

By W. LANGDON BROWN, M.A., M.D. Cantab., F.R.C.P. Lond., Assistant Physician to St. Bartholomew's Hospital, &c. Third edition. London: Baillière, Tindall, and Cox. 1914. Pp. 408. Price 5*s.*

IN reviewing previous editions of this book[1] we called attention to the fact that advances in physiology often fail for many years to find themselves reflected in clinical work, and indicated that the task set himself by the author was to bridge the gulf between the experimental laboratory and the sick ward, and to reconcile physiology with therapeutics, offering to the general practitioner, to whom the work is addressed, a physiological reason for the therapeutic faith

[1] THE LANCET, Dec. 26th, 1908, and Feb. 18th, 1911.

that is or ought to be in him. We also gave expression to a high opinion of its merits.

The time that has elapsed since the second edition was published has necessitated very thorough review, and has led to some rearrangements and the addition of two chapters. One of these chapters deals at length with the mechanical factors in indigestion. Attention is drawn to "spasmodic hour-glass contraction." Much controversy has centred round the question of the existence of a "middle sphincter" in the stomach. It is known that under abnormal stimuli the circular muscle at the beginning of the pyloric vestibule is capable of powerfully contracting and dividing the gastric lumen. The condition is liable to be mistaken for an organic hour-glass contraction. Dr. Brown expresses the view that the spasm is usually due to the presence of an ulcer, which is generally situated on the lesser curvature, and may be quite small. But it may occur in other conditions, and we think that he is probably right in the belief that the symptoms in so-called "appendix dyspepsia" are in part at any rate due to such reflex spasm. A chapter, which is partly new, is headed "Albuminuria and the Treatment of Nephritis." The difficulties in arranging the diet are duly discussed, and it is rightly pointed out that too rigid a limitation of the protein with the idea of diminishing the albuminuria is bad, because it cannot effect the desired object and deprives the patient of an essential form of nourishment. On the other hand, an excessive protein diet is inadvisable, even if the patient can metabolise it, because he is getting the energy in a form that throws work on to the damaged excretory organs. We agree with Dr. Brown's contention that it is undesirable to restrict patients suffering from chronic nephritis to milk, which is too dilute a form of food for them, and may increase the œdema.

There is much in this volume that is of value to the practitioner; the work is well written and affords interesting reading.

The Operative Treatment of Fractures.

By Sir W. ARBUTHNOT LANE, Bart., M.S. Lond., F.R.C.S. Eng., Senior Surgeon to Guy's Hospital, and Emeritus Surgeon to the Hospital for Sick Children, Great Ormond street. Second edition. London: The Medical Publishing Company, Limited. 1914. Pp. 184. Price 10*s.*

Twenty-two years have elapsed, the author tells us, since he made it his habitual practice to operate on all cases of simple fractures of the long bones in which he was not able to obtain accurate apposition of fragments, when the restoration of the bone to its normal form was of mechanical importance to the individual; and this statement expresses the idea of the book. The reasons for all that the author does are clearly explained, and he describes the results that he has obtained.

Opinions certainly differ on many points in relation to the systematic plating of bones, but all surgeons must acknowledge the ingenuity of the author's methods, the skilfulness of his manipulations, and the excellence of the results obtained. Those who do not know at first hand the methods advocated by Sir Arbuthnot Lane will find in this volume what they wish to know; but they should see the author at work if they wish to appreciate fully what surgery can do in fractures.

LIBRARY TABLE.

Medical History Manuals: Pasteur and After Pasteur. By STEPHEN PAGET. London: Adam and Charles Black. 1914. Pp. 152. Price 3*s.* 6*d.* net.—It is obvious that the history of medicine will soon have to be treated after the fashion of the Cambridge Histories—that is to say, in periods by specialists. The book now before us is the first of a forthcoming series of Medical History Manuals to be published under the general editorship of Dr. J. D. Comrie, future volumes of which are to deal with Greek and Roman Medicine, Mediæval Medicine, the Artist Anatomists of the Cinque Cento, Sydenham and Clinical Medicine, and the Predecessors of Lister, all by various writers expert in the subjects which they have undertaken. In this volume Mr. Paget has devoted the first 90 pages to a simply written résumé of Pasteur's life and work, derived in great measure, as he himself admits in his preface, from M. Vallery Radot's "Vie de Pasteur." It is well that British readers who have not the time and possibly not the energy to embark on the study of the longer life should have the opportunity of studying the main facts of a life so unassuming, so earnest, so painstaking, and so fraught with benefit, both to man and the animal creation, as was Pasteur's. Theology is called the queen of the sciences because it includes all the others, and for this reason, that the patient and humble study of Nature is a chief path that leads to a knowledge (as far as finite minds can understand the Infinite) of the Creator of all things. And of Pasteur, whose studies into the secrets of Nature began with the humble "life" of crystals, it was said that "here was a man whose spiritual life was no less admirable than his scientific life." From Pasteur's labours came much of Lister's work and the understanding of, together with the ability to defeat, infective diseases, especially as Mr. Paget shows, tuberculosis, diphtheria, cholera, plague, typhoid fever, Malta fever (known no longer by the unfair name), yellow fever, malaria. It was from Pasteur's work on fermentation, putrefaction, the diseases of silkworms, anthrax, and many other phases of departure from health, that other earnest workers found out how to fight disease, and no more simple or striking proof of this can be found than in the account of the stamping out of undulant fever as given in Mr. Paget's excellent little book.

The Elements of Chemistry. By H. Ll. BASSETT, B.A., B.Sc. With an introduction by Professor W. S. POPE, M.A., F.R.S. London: Crosby Lockwood and Son. 1914. Pp. 368. Price 4*s.* 6*d.*—There is nothing strikingly original about this collection of principles and facts presenting, in the author's words, "as concisely as possible all the chemistry—general, inorganic, organic, and practical—that is required for the Conjoint Board and First Medical Examinations." It will serve its purpose, however, if it is placed early enough in the hands of students who intend to pursue a medical or dental career, inasmuch if they digest so much chemistry before they join the hospital or university so much time will be saved. The author has been careful to include just what is necessary. While it is something more than an elementary school book, it avoids a stock of materials which for the time being, at any rate, are not essential. Nowadays, of course, the student of medicine finds that he must pursue chemistry considerably further than the mere elements, or his ideas of the great physiological processes will be most incomplete. However, it

is a decided gain to secure a good groundwork, and this is well provided for in this book, which is clearly written and well arranged.

Artrocaces (*Artritis Tuberculosas*). Por el Doctor D. RICARDO LOZANO MONZÓU, Zaragoza: Tipografía de G. Casañal. Pp. (circa) 600. Price 15 pesetas.—Dr. Monzóu divides his work on tuberculous arthritis into two parts, general and special. In Part I. he opens with a brief introduction dealing with the history of the subject, in which four periods are recognised, an archaic period of confusion, a middle period of rudimentary differential diagnosis between tuberculous and other arthritic affections, a modern period commencing with the discovery of the tubercle bacillus by Koch and its demonstration in scrofulous joints, and the present period of "therapeutic controversy." The remaining chapters of this division deal with etiology, pathological anatomy, symptomatology, prognosis, and treatment, general and local. To the chapters on treatment are appended statistical tables summarising the operative work of the author and of Dr. Rollier, of Leysin, up to the end of 1913. Parts II., III., and IV. deal respectively with tuberculous arthritic affections of the upper and lower extremities and of the trunk, each articulation being treated of individually. A brief account is given in Part V. of tuberculous polyarthritis or tuberculous rheumatism of Poncet. A useful bibliography completes this portion of the book, the remaining pages being devoted to illustrations, of which there are no fewer than 196.

Clean Water and How to Get It. By ALLEN HAZEN. Second edition, revised and enlarged. London: Chapman and Hall, Limited; New York: John Wiley and Sons. 1914. Pp. 196. Price 6*s.* 6*d.* net.—This book contains interesting statistics in connexion with questions of communal water-supply. General principles of course apply to every country. The references here given are limited to the water undertakings in the United States, but valuable lessons are given to all water engineers and public health authorities. We spoke favourably of this book on the occasion of the first issue in 1907. It has now been brought up to date and into line with the progression made in water engineering schemes.

JOURNALS AND MAGAZINES.

British Journal of Tuberculosis.—In the January number Dr. Kenneth Fraser discusses, in a commended M.D. Thesis of the University of Edinburgh, early pulmonary tuberculosis in childhood. On the basis of an examination of approximately 300 cases of pulmonary tuberculosis, mostly incipient, among 29,750 elementary school children in Cumberland, an investigation was conducted into age incidence, weight and nutrition, the meaning of night sweats, the occurrence of cough, the pathological condition of the lungs, the detection of pulmonary dulness, the presence of accompaniments, and the character of breath sounds. In relation to children Dr. Fraser suggests the expression inadequate increase of weight in place of failure to put on weight or loss of weight, for "physiologically even the phthisical child is automatically increasing in weight year by year." Among his conclusions he considers inadequate increase of weight as very suspicious; defective nutrition as probably the earliest indication of tuberculous infection; inequality of breath sounds as a very early indication, of which friction and fine crepitations are the most significant accompaniments, though all accompaniments are suspicious if persistent and especially if localised.—Mr. H. Morriston Davies discusses the surgical aspects of pulmonary tuberculosis, immobilisation of the lung and obliteration of cavities, and the selection of cases suitable for treatment by immobilisation.—Mr. Harold Barwell reviews recent views on laryngeal tuberculosis, Mr. Godfrey B. Dixon considers the domiciliary treatment of tuberculous patients, and Dr. William Cox discipline and recreation in the sanatorium.—Dr. Thomas D. Lister in an illustrated article describes an apparatus for the production of artificial pneumothorax, based on that of H. de Carle Woodcock, of Leeds, oxygen being added to the nitrogen used in the former.

Science Progress.—The January issue, after an article on Militarism and Party Politics, contains a sympathetic criticism by Mr. H. G. Plimmer, F.R.S., of Mr. T. A. Cook's book, "The Curves of Life," which was reviewed in our columns recently.—Miss L. S. Stebbing replies to Dr. C. A. Mercier's article in the October issue on Some Logical Impossibilities, suggesting that the syllogism is not the exclusive form of all argument; and, secondly, that Dr. Mercier's non-syllogistic arguments are merely syllogisms in disguise, depending for their validity on an unexpressed but necessarily implied proposition.—Mr. Hugh Elliot presents us with a survey of the problem of vitalism, showing the ground already traversed by controversialists, examining the types of arguments used, and estimating the position now reached. His trend is mechanistic.—Mr. Allan Ferguson discusses Capillary Constants and their Measurements, and suggests that, inasmuch as in a large number of papers dealing with this subject the multitude of units in which surface tensions are given causes a great deal of trouble, much labour would be saved to those engaged in comparing the accuracy of different methods and searching for general results connecting capillarity and constitution if capillary constants were invariably expressed in C.G.S. units—surface tensions in dynes per centimetre, and specific cohesions in square centimetres.—Mr. J. N. Pring, in a paper on the Formation of Ozone in the Upper Atmosphere and its Influence on the Optical Properties of the Sky, considers certain factors which determine the optical properties of the atmosphere, and discusses the chemical estimation and distinction of some constituents of the atmosphere, the action of ultra-violet light on air, the estimation of ozone in the atmosphere at high altitudes, and the influence of ozone on the nature of light from the sky.—Dr. F. W. Edridge-Green discusses colour vision and colour vision theories, including the theory of vision, and incidentally enters a very cogent protest against the official scientific methods of accepting or rejecting papers.—A paper on the International Struggle for Manufactures as Illustrated by the History of the Alum Trade, by Mr. Rhys Jenkins, is followed by an illustrated article by Mr. C. Edward Wallis on Ancient and Modern Dentistry, which contains considerable interesting material. It should be mentioned that in the notes following the articles is one on the Society of Members of the Royal College of Surgeons of England, with an exposition of its aims, and a statement of the chain of events which called it into existence.

British Journal of Inebriety.—The principal feature of the January number is an article by Dr. R. Armstrong-Jones on Drug Addiction in Relation to Mental Disorder. The author considers the question in the light of his experience as an asylum physician, basing his remarks on observations of some 40 cases of drug-takers in whom mental deterioration reached the degree of certifiable insanity. With regard to such cases, as with the similar cases of alcoholic intemperance, the question naturally arises whether the drug habit is to be considered as the cause or the consequence of the mental disorder. Dr. Armstrong-Jones's reply to this question is that while in most, if not in all, instances a certain degree of nervous abnormality must be admitted as an antecedent condition, it is clearly evident, on the other hand, that without the aggravating influence of the intoxication the graver destructive changes in the neurotic organisation would not have occurred at all, or, at all events, would have been much later in developing. And this fact is of practical account, for the reason that abnormal individuals of this class frequently possess, by virtue of their very abnormality, special endowments, notably in the way of artistic and literary aptitudes, which give a high social value to their work. In agreement with the majority of observers, Dr. Armstrong-Jones finds that opium or some derivative of opium, generally morphia, is the most important of the habit-forming drugs. Next in order of frequency come the new synthetic sedatives, amongst which veronal is especially

prominent. In several instances the drug habit appears to have been initiated by the use of quack remedies, such as various patent "headache powders" and "nerve tonics." Most of the patients were brain-workers, and more than one-third of them were doctors or nurses. The average age on admission under asylum care was 40 years for males and 43 for females. With regard to the mental symptoms which the patients presented, the most interesting points to note are the prominence of disorders of conduct and moral sense and the frequency of suicidal tendencies, which were observed in 57 per cent. of the cases. The paper concludes with an emphatic appeal for a more effective control of the sale of dangerous drugs.—Dr. Mary Scharlieb, Sir George Savage, and several other physicians contribute brief comments on the points discussed by Dr. Armstrong Jones, and express their complete concurrence with his plea in favour of legislative action to check the evil of habitual drug-taking.—A short article by Mr. John Newton notes with approval the action of Russia in prohibiting the sale of vodka during the war, and quotes journalistic evidence as to the good effects that have followed this measure.

Knowledge.—A note in the January issue on obtaining chlorophyll and phycoërythrin from red seaweeds appears under the name of Mr. W. B. Grove, and among the correspondence is a letter asking whether it is not possible to find a process by which the wool for woollen fabrics may be made not only aseptic but antiseptic. The query is suggested by the statement that in the present war whenever serge from the clothing is carried into wounds by shell fragments the wound is more septic than is usually the case when it is similarly contaminated by shreds of linen.

PLAGUE INVESTIGATIONS IN INDIA.[1]

NINTH REPORT.

THE Advisory Committee appointed by the Secretary of State for India, the Royal Society, and the Lister Institute have recently issued their ninth report on plague investigations in India. In continuation of previous inquiries directed to find out the reasons why some parts of India have suffered less from plague than others, the circumstances of the Madras Presidency were specially investigated. In a previous report the comparative immunity of the city of Madras from plague was considered, and in the present inquiry the conditions of some other parts of the Presidency were examined by Major J. C. Kunhardt, I.M.S., and Captain J. Taylor, I.M.S., who were assisted in the work by five assistant surgeons of the Indian Medical Service.

Epidemiological Observations in the Madras Presidency.

The portions of the Presidency specially inquired into were: (1) the Bellary district, the Mysore plateau, and the Nilgiri Hills, which had suffered severely from plague; (2) a zone, which had suffered but slightly from plague, lying immediately below and around the above-mentioned areas; and (3) the east coast and southern part of the Presidency which had escaped the ravages of the disease. A full description of these areas is given, including their physical features, climatic conditions, distribution of plague, rat and flea prevalence, susceptibility of the local rats to the infection, and other matters. 90 per cent. of the plague deaths in the Madras Presidency were found to have occurred in certain districts which immediately adjoin infected areas in the Bombay Presidency and the State of Mysore. In some years when the temperature has been lower and the humidity higher than normal plague has extended to places immediately adjacent to the infected areas of the Madras Presidency mentioned above, and serious epidemics have developed in certain municipal towns, while the disease in the surrounding villages had generally been mild. Although the disease has invaded the Presidency, it has shown little tendency to spread beyond the limits already indicated. While the districts which suffered the most have the characteristic in common that they are in closest proximity to infected areas outside the Presidency, they also resemble each other in being the most elevated and coolest parts of the province. A low-lying comparatively hot and dry plain separates the areas at present infected from the more humid and cooler coastal regions. Plague has rarely occurred on the east coast; but on the west coast the seaport towns of Mangalore and Calicut, which have intimate trade relations with Bombay, have suffered from the disease. It appears then that the proximity to infected areas and the facilities for communication with them have been of more importance in determining plague incidence than climate in the Bellary district. Kurnool, with a similar climate but more distant from infected centres, and having also less rapid and efficient means of communication, has suffered but little. On the other hand, plague has been severe in the Nilgiris where the population is scattered and the means of communication are indifferent, but where the climate is very favourable for the spread of the disease. The number of fleas found on rats depends to a great extent on the climate. Experiments showed that rats caught in places in Madras which have been free from plague epidemics are very susceptible to the infection, and this is a favourable factor for the development of plague. The existence of such susceptible rats at present in certain places in India, now that plague has continued there for a series of years, indicates that conditions exist in such places hindering the successful implanting of infection in them. It is difficult to determine what these conditions are, but the investigators are inclined to attribute this comparative immunity to the warm climate obtaining over the greater part of the Presidency. As plague is carried from place to place in the bodies of infected fleas any local conditions affecting survival of these insects, apart from a host, are of importance in determining the liability of the neighbourhood to plague. When separated from their host rat fleas speedily succumb to the combined effects of a high temperature and drying. Unfavourable conditions of this kind are found in the hot and dry plains separating the cooler and moister sea-coast districts from the existing plague infected areas in the Presidency. This region breaks the chain of communication between the infected area on the west and the cooler regions of the east coast. As no satisfactory harbour exists on the east coast of the Presidency where ships can discharge cargoes there are few facilities for the landing of infected rats. The physical features and climate of the Madras Presidency, therefore, have an important influence in limiting the distribution of plague in it.

Experimental Researches.

Dr. Sydney Rowland, of the Lister Institute, carried out a number of valuable researches, details of which are given in the report, relating to plague, including further experiments on vaccination against a body strain of plague; immunisation by pseudo-tubercle; immunisation by living avirulent cultures; the influence of race on the efficiency of antigen; the failure to vaccinate against a virulent body strain even with an antigen prepared as far as possible under body conditions; the protection and curative value against infection with a serum race of plague, of the serum of a horse immunised with nucleo-protein extracted from a strain of plague bacilli propagated on serum protein; and lastly, ultra-violet light as a germicide in the preparation of plague vaccine.

Entomological Investigations.

Mr. A. W. Bacot, entomologist to the Lister Institute, made a series of observations on the length of time that fleas (Ceratophyllus fasciatus) carrying bacillus pestis in their alimentary canals are able to survive in the absence of a host and retain the power to re-infect with plague. He also contributes to the report some further notes on the mechanism of the transmission of plague by fleas. He supplies, likewise, some notes, with two illustrative plates, on the development of bacillus pestis in bugs (Cimex lectularius) and their power to convey infection. He found that the development of B. pestis within the crop of bugs differs generally from that which takes place in the stomach of the flea in respect of its slower and looser growth, this limitation of activity being accompanied by, and possibly due to, the preservation of the structural character of the blood for many days after its ingestion into the crop. The absence of any definite valve between the pump and the crop, together with the looser nature of the growth within the bug, preclude the idea of such mechanical blockage as causes regurgitation and mouth infection by fleas.

[1] The Journal of Hygiene. Plague Supplement IV. Being the Ninth Report on Plague Investigations in India. Issued by the Advisory Committee. The Cambridge University Press. January, 1915. Pp. 109. With maps and charts and 4 plates. Price 7s. net.

THE LANCET.

LONDON: SATURDAY, JANUARY 30, 1915.

The Dearer Loaf.

THE rise in the price of wheat flour from 26s. a sack before the war to the present figure of 45s. is, of course, serious. With the economic conditions which have led to this advance we do not propose to deal beyond expressing a belief that it is due not to a famine but to a shortage of labour and a resulting congestion of shipping. If we are right the remedy is obvious, and its application should be simple and near, and in that case there is no ground for panic, though some apprehension as to immediate effects is reasonable. We look with confidence to the Cabinet Committee, recently appointed to consider the question of food supplies and prices, and presided over by the Prime Minister, to deal promptly with the conditions which are at the root of the present general advances. All medical men and sanitarians are concerned in the question of applying scientific methods with a view of relieving the inconvenience of high prices when they prevail. In a former article[1] we referred to the directions in which our food-supplies could be augmented, and the present seems to be an opportune moment for returning to this subject. We are inclined to think that the time has come to put aside a conventional contempt for or prejudice against so-called substitutes, because it is undoubted that dietetically many of them can effectively replace certain articles of food for which only custom has reserved a place of respect in the common dietary. So long as honest dealing is the rule, substitutes supply a common need in a way not appreciated in all quarters; their use, at any rate, would materially help the householder to keep his domestic expenses down while ministering equally to his physiological needs.

For the present we may defer presenting the case for margarine or dripping as substitutes for butter, or glucose for dear sugar, and confine our attention to the loaf. According to reports from Germany, attempts have already been made in that country to lighten the burden of the dear loaf by putting in it a notable proportion of potato or forms of potato flour. Cheaper admixtures have been proposed, including materials possessing very little nourishing or even energy value at all. We do not think that this country will be reduced to any such expedients. But in the meantime it is just as well to consider how the loaf may be cheapened without affecting its energy value. To the majority of people bread is not a source of nourishment, but only of energy. To the extreme poor, often limited sadly enough to bread with butter or jam, the nitrogenous contents of the loaf become of very great importance. It does not matter clearly to the man who can add to his bread some cheese or meat whether that bread is rich in nitrogenous material or not. To the poor it matters a great deal, and that is a difficulty to be faced when suggestions are made to cheapen bread by mixing with wheat flour a cheap farinaceous substitute. On this point some interesting observations are made by Dr. E. FRANKLAND ARMSTRONG in an article on the "Chemistry of Wheat and Flour."[2] He observes that flour is primarily a starchy material, but those characteristic properties which enable it to be made into bread are due almost entirely to the presence of some 10 per cent. of nitrogenous material—the gluten. Consequently from the point of view of the miller and baker gluten is the all-important constituent of flour. But to-day, and somewhat irrationally, gluten has come to be regarded by the would-be food expert as the essential constituent, overlooking the fact that bread is eaten primarily, not as a source of protein, but as an easily digestible, attractive form of starch. The man in the street properly regards bread as equivalent to rice, potatoes, or the like, rather than as a substitute for meat; and it is not surprising, Dr. ARMSTRONG thinks, that the academic reformers have failed to secure followers. The proportion of gluten, we may point out, varies widely in different flours, and "grade" is based largely upon this fact. It would be possible to add to rich gluten flours a proportion of starch, as, for example, cornflour, which is very much cheaper than wheat flour, without materially reducing the nitrogen value when compared with a low-grade wheat flour. The energy value of such a loaf would be quite high, while its nourishing properties would be little impaired. If it should be feasible to introduce, say, 20 per cent. of cornflour in this way into a strongly glutinous flour a very definite economy would be gained, and a loaf decidedly cheaper than the all-wheat-flour loaf would be available for food purposes. There are the probabilities, also, of increasing the "strength" of the gluten as a formative agent by activators such as phosphoric acid or phosphates which are not foreign ingredients of flour; thus it might be possible to increase the addition of cheap starchy materials still further. Since the supply of pure maize starch is practically inexhaustible, and there has been no appreciable rise in its price—certainly no advance anything like that in wheat flour—the attention of our authorities may usefully be drawn to this suggestion. It may be remembered that cornflour is amongst the most easily digested farinaceous foods.

[1] THE LANCET, August 15th, 1914, p. 464.

[2] Nature, Jan. 7th, 1915.

The movement for "standard" bread has been revived, for it is contended that the loaf production of the country would be increased from 10 to 20 per cent. by using practically the whole of the grain. By the rejection of the germ and by roller methods of refining flour it is urged that much valuable food material is lost. That may be so, but it is doubtful whether the adoption of a standard bread will cheapen the loaf, for the separated germ is an independent source of revenue; and it is not a famine we are confronted with, but dearness arising out of reduced transport facilities. To meet the difficulty we ought to use all ingenuity. For example, the industrial use of low-grade flours for "sizing" and "filling" purposes in the textile trades may want supervision from the food-supply aspect. Although described as low-grade, there can be little doubt that such flours would serve for human food, and they can be replaced for this industrial purpose by "sizes" showing a lower food value. We hope that the attention of the Cabinet Committee appointed to consider the question of food supplies and prices will be directed to the fact that very many thousand tons of wheat flour are annually used for "sizing" purposes in the textile industries. And yet it is well known in the trade that the "sizing" process is by no means dependent upon wheat flour, and that other materials such as the plain starches can be used equally well for the purpose. The Cabinet Committee will have evidence placed before it in many directions of the most interesting and important kind. The result of its labours will be looked for anxiously, and success will follow if the reasons for any measures adopted are scientifically sound, and are explained in simple language to the public.

Medicine and Surgery in War.

IT is only natural that at the present time, when all our energies are being devoted to the carrying on of a great war, that the *British Journal of Surgery* should contain little that is not connected in one way or another with war. This month has also appeared the first number of a new medical quarterly, the *Journal of the Royal Naval Medical Service*. This is edited by Fleet-Surgeon R. C. MUNDAY and Fleet-Surgeon W. L. MARTIN, and if from the first number we may gauge the value of the contents of succeeding issues it will form a most important addition to British medical literature. Almost the only article in this number which is not directly concerned with war is that by Staff-Surgeon E. L. ATKINSON, dealing with the British Antarctic Expedition from 1910 to 1913. Even this throws light on matters now affecting both our army and navy, for it treats *inter alia* of frost-bites, various forms of which have been seen so widely of late in our army in Flanders. It is of interest to note that the snow of the Antarctic regions is too cold to be employed for rubbing a frozen nose or ear, though this may be the best treatment for frost-bite in more temperate climes. One of the most interesting papers is that by Fleet-Surgeon WALTER K. HOPKINS on the action off Heligoland, in which the value of an early and thorough cleansing of wounds is clearly shown; he was on duty 37 hours during and after the action, and evidently did an immense amount of work. The difficulty of localising bullets in the body and limbs is sometimes very great, and the method suggested and described by Surgeon S. BRADBURY is simple and appears to be very useful; it consists essentially in finding the position of the bullet from two aspects and then tracing its real position by means of a strip of lead. This needs rotation of the limb through only a few degrees, and therefore little disturbance of the patient. The paper on the prevention of typhoid fever by Fleet-Surgeon P. W. BASSETT-SMITH is timely, when we find preventive treatment of typhoid fever so violently assailed. Of great interest and importance is the note by Surgeon SHELDON F. DUDLEY on a typhoid carrier; the man was "ship's cooper" and therefore he was brought in contact with articles of food when opening casks; in 13 years he had served in 12 ships, and he had given rise to 53 cases of typhoid fever, of whom 11 had died. Surgeon A. VAVASOUR ELDER has written a valuable paper on ambulance trains, containing an account of Naval Train No. I. In this the cots are movable and not fixed; thus there is much less disturbance of the patient in taking him into and out of the train, and he is much less affected by the jarring of the train. We have said enough to show that in the *Journal of the Royal Naval Medical Service* we have a valuable addition to medicine.

In the January number of the *British Journal of Surgery* are many important papers bearing on the war. Lieutenant-Colonel C. B. LAWSON and Mr. H. BECKWITH WHITEHOUSE have published a communication on the treatment of acute emphysematous gangrene, a disease which has appeared with great frequency in the present war. The treatment employed consists in the injection by means of a Higginson syringe of hydrogen peroxide into the healthy tissues three or four fingers' breadth above the line of advancing gangrene, as shown by the dusky copper-coloured tint of the skin. It is essential that a complete belt of oxygen should be formed above the gangrene, and therefore several openings may be needed, and the dissemination of the oxygen must be aided by kneading and massage. A certain amount of shock is produced, especially if the upper limb is affected; and general anæsthesia, or sometimes spinal anæsthesia, must be employed. As to the results: of 11 cases treated by infiltration 8 recovered, while of the 3 cases not treated by infiltration all died. Especially it seems to follow from these cases that amputation above the grangrene is not only not called for, but that it may be dangerous, for it may prove fatal from shock. Professor TUFFIER, of Paris, has written a short note on military surgery as seen

in the present war, and he lays great stress on the need of using antitetanic serum early in cases of lacerated wounds. The importance of ambulance ships is acknowledged, and therefore we are glad to see two papers on this subject. One is by Mr. SEYMOUR BARLING, who points out that in the cases carried in ambulance ships there is an undue proportion of wounds of the upper and lower limbs, because the more serious wounds of the head, thorax, and abdomen remain in the hospitals of France. Mr. CHARLES A. PANNETT, serving in the hospital ship *Liberty*, discusses in a practical way the fitting up of hospital ships, their personnel, and the transport of wounded. Some very striking skiagrams taken by Captain HERSHEL HARRIS, of Sydney, accompany an account of radiography at the Australian Voluntary Hospital, Boulogne. Mr. WILLIAM THORBURN has described the work of the 2nd Western General Hospital and Mr. GILBERT BARLING that of the 1st Southern General Hospital. Mr. D'ARCY POWER has contributed a note of a case in which gold coins were carried into the back by a shell fragment; and Mr. W. BALY PEACOCK has illustrated a case in which a pile of five-franc pieces were deeply scored and bent by a bullet. Lastly, we may mention an account of a visit to some of the military hospitals of Paris and Boulogne, an especially full account being given of the Hotel Majestic in Paris.

It will be seen from these admirable professional journals that the medical profession, both naval, military, and civil, are doing their best for those who have suffered wounds and injuries in this war. The energy with which the writers have managed to find time to put on paper some of the lessons which the war has already taught us is to be highly commended, while it is rapidly becoming clear that the whole subject of military surgery will require overhauling in our text-books.

SCOTTISH POOR-LAW MEDICAL OFFICERS' ASSOCIATION.—The council in its report for the year 1914 states that the number of vacant appointments was not so large as usual, and the correspondence in connexion therewith was therefore considerably less. The new Order issued by the Local Government Board came into force rendering all forms of tuberculosis notifiable. A fee of 1*s.* is payable by the local sanitary authorities in respect of each case occurring in parish practice, and 2*s.* 6*d.* for cases occurring in private practice. The Highlands and Islands (Medical Service) Grant Act came into force, and, from all the council has been able to learn, will do much to render the position of medical officers in the Highlands and Islands much more satisfactory, both in regard to remuneration and status. It is especially noted that medical officers in the crofting counties now have an appeal to the Local Government Board in cases of dispute with their parish councils. From all the information the council has gathered the National Insurance Act appears to be working to the benefit of both Poor-law medical officers and the public in sparsely populated districts. The annual meeting of the association will be held in the St. Enoch Station Hotel, Glasgow, to-day, Friday, Jan. 29th, at 4.30 P.M.

Annotations.

"Ne quid nimis."

THE BELGIAN STUDENT AND THE UNIVERSITY OF CAMBRIDGE.

THE Master of Christ's College, Cambridge, Professor Shipley, writes:—"We are gradually building up a little Belgian University here for students who, for one reason or another, cannot go to the front and for professors who are past the age of serving. Altogether we have between 100 and 200 students and some 15 to 20 professors. Last term we were able to establish effective teaching in four faculties and this term we have increased the number to six. In the Faculty of Medicine we are in need of copies of some standard text-book on human anatomy, preferably Gray's." The University of Cambridge has already found several thousand pounds to support her guests, and will have to find several thousands more to fulfil the obligations which she has undertaken, even if such a term is put to them as next June. It will be necessary to husband resources very carefully, and it is not possible to purchase expensive text-books. It may be that some of our readers have copies of "Gray's Anatomy" lying unused on their shelves. If this is so, the Master of Christ's College would be grateful if they would send them to him at Christ's College Lodge. At present ten or a dozen copies would suffice, we are told.

INSANITY IN EGYPT.[1]

AGAIN we have to review a piece of most excellent work carried on in very trying conditions. The report may be said to be a year old, but delay in publication was due to the stress of work which has fallen on Dr. J. Warnock in consequence of the tragic death of his able assistant during the year 1914 and the present apparent difficulty in replacing him. The report is one of the most complete records of the work done and of the various lines of development which can be imagined. It is a puzzle to understand how Dr. Warnock can manage the big asylum and yet find time to enter into minute details. His report is a mine of information which ought to be a field for all workers on developing institutions for the treatment of insanity. We can only shortly refer to a few special points. 1329 cases were treated during the year 1913. Pellagra showed an increase and is said to be the most frequent cause of insanity in Egypt. As in former years, there was excess of admissions over the space for their reception, this excess being most on the men's side. It is sad to notice that for want of accommodation over 200 cases were discharged while still insane, thus leading to returns of insane on the one hand and to criminal acts on the other. The further development of Khanka under Dr. H. W. Dudgeon did a good deal to relieve the acute pressure, and as a result of less crowding the recovery rate was increased. In every part of the report there is evidence of strenuous and earnest work. It is satisfactory to know that the Lunacy Department in Egypt is no longer part of the Public Health Department, but is under the

[1] Reports of Government Hospitals for the Insane at Abbassia and Khanka, Egypt, for 1913.

directorate of Dr. Warnock, and is attached to the Ministry of the Interior. There is a great gain in the addition of skilled English female nurses, as till these were sent women of the lowest class had to be employed. Dr. Warnock and Dr. Dudgeon deserve the highest praise for their work and their report proves this.

EXTRAORDINARY ACCIDENTS.

IN our last issue we printed an account by Lieutenant T. O. Thompson, R.A.M.C., of a patient who impaled himself on the handle of a hayfork. The only noticeable lesion was a tear of the scrotum some three inches in length, but the fork handle had passed almost subcutaneously from the scrotum to the interclavicular region; it had carried in with it some hay and also a portion of the patient's clothing. The second rib was broken and much sepsis followed. In spite of this severe injury the patient was able to walk three miles home and to drive thence ten miles to the hospital. This case shows well that extensive internal injuries may be present as the result of an accident, and yet the obvious lesions may be small. There is to be noted a curious sameness about lesions resulting from falling upon the handles of hayforks. We may quote one from the *American Journal of the Medical Sciences* for 1853; there was reported a case which was under the care of Dr. Sargent, of Worcester. The patient was a lady 37 years of age, and she slipped down from a hayloft and impaled herself on the handle of a hayfork; the handle entered the vagina and penetrated 22 inches, and its entrance was stopped only by her feet touching the ground. The handle was immediately withdrawn, and though the patient complained of some pain on the left side of the thorax she was wonderfully little affected. Surgical emphysema developed above the left clavicle, and later it was found that the first rib on the left side was broken. Several other similar cases have been recorded in which impalement has occurred with very little external evidence of injury. In THE LANCET of 1885 we published an interesting case reported by Dr. Shirtliff. A coal porter was found dead on a railway line, showing only bruising of the abdomen and surgical emphysema of both sides of the abdomen and of the right side of the chest, yet at the necropsy the left pleural cavity was found to contain in addition to a large quantity of blood, the torn spleen, the stomach which had been separated both at its cardiac and its pyloric ends, and also a piece of the liver; these had passed through a large hole in the diaphragm. In the right pleural cavity were also much blood and many small pieces of the liver, which had come through a small opening on the right side of the diaphragm. Of the portion of liver which remained in the abdominal cavity much had been reduced to pulp; many of the branches of the mesenteric veins had been torn, and four yards of the intestine had been forced into the scrotum. The bladder was ruptured and the aorta was torn through at the level of the tenth dorsal vertebra, which was fractured; many ribs were also fractured. In this case the amount of external injury was utterly out of proportion with the damage which had been done to internal organs. Every surgeon knows how slight may be the external evidence of injury when a cart-wheel has passed over the abdomen, and yet a rupture of the intestine may have been caused. Only a week or two ago the daily press reported that a child had been brought to a hospital after having received a blow in the abdomen. As the external injury was slight, and there were no signs that any internal viscus had been damaged, the child was sent home, but later the appearance of peritonitis showed that internal damage had been done, and it was found that rupture of the bladder had occurred. It is difficult to lay down hard-and-fast rules, but it may be said that in all cases when the nature of the accident renders it possible that a severe injury to some internal viscus has occurred, even though no signs of it are present or can be elicited, it is wise to keep the patient under observation, so that at the first sign of internal injury manifesting itself surgical intervention may be available.

SUBJECTS OF AORTIC INSUFFICIENCY IN THE FIGHTING LINE.

IT has often been said with truth that our press has not done justice to the achievements of the French in the war. The fault has not been due to any desire to overrate our exploits by underrating theirs, but partly to the secrecy which has largely veiled the military operations and partly to a naturally engrossing interest in the work of our own troops. The want of appreciation is not so much of the valour of our Allies, for which no praise could be too great, but of the extraordinary efforts which they are making to confront a numerically greater military power. The magnitude of these efforts is no doubt obscured by the fact that the French preparations for such a gigantic struggle were insufficient. However, it must be remembered that complete preparedness could be expected only in the Power which planned the war and struck at what she conceived the opportune moment. The extraordinary efforts now being made by France are strikingly shown by the willing and successful part taken in the campaign by the subjects of grave organic disease. We recently called attention to the case of a tuberculous man, the subject of artificial pneumothorax, who successfully went through the arduous campaign in Northern France during the month of August and broke down only during a forced march.[1] He was shown at the Société Médicale des Hôpitaux of Paris by M. Rist. At a subsequent meeting M. Ch. Aubertin reported cases in which the subjects of aortic insufficiency took part in the campaign. Curiously, this flagrant violation of therapeutic rules was unattended by accidents. While engaged during October at the Gare de l' Est in examining the sick and wounded arriving from the front he was surprised to find among them cases of aortic insufficiency. During a fortnight he observed five among a relatively limited number of soldiers. The ages of the patients ranged from 20 to 30 years. One joined the army on his own demand, in spite of the lesion being found at the medical examination; the others did not know of the existence of the disease. They all had taken full part in the campaign, including the battle of the Marne. Some of them had marched as much as 30 kilometres a day with their knapsacks. The trouble which caused them to be sent back as "éclopés" was almost always general fatigue, rarely palpitation. In no case could M. Aubertin find œdema, arrhythmia, dyspnœa,

[1] THE LANCET, Dec. 19th, 1914, p. 1426.

anginal attacks, pulmonary signs, or enlargement of the liver. There was no history of cardiac failure even in the slightest form. Some of them returned to the front. They all showed well-marked aortic insufficiency with manifest hypertrophy of the left ventricle and peripheral signs. In all cases the disease was of rheumatic origin. In the discussion which followed M. A. Siredey and M. de Massary reported cases in which on examination for life insurance they found to their surprise aortic insufficiency in strong and vigorous men given to sports and athletic exercises.

FEBRILE CONDITIONS FOLLOWING OVARIECTOMY.

IT has been frequently noticed that women who have been subjected to operative treatment for ablation of the ovaries present a rise of temperature of moderate intensity occurring without rigors and having a characteristic duration of 15 days, after which a condition of complete and absolute apyrexia becomes established. During this febrile period the patients do not experience any general disturbance of importance; having recovered from the operative shock their general condition is satisfactory and cicatrisation of the wound takes place normally and without complications. After 15 days the fever disappears and convalescence is established. This thermic rise is met with in cases of simple ovariectomy for inflammatory conditions and also in those in which hysterectomy has been performed together with removal of the tubes and ovaries, but is especially frequent in cases of ovarian sclerosis with marked general nervous phenomena. Dr. P. Azara, in a recent issue of *Il Policlinico*, draws attention to this condition, in which the thermometer does not rise above 38° or 38·1° C., and offers an explanation of it. Chiarugi had already described in his work on the surgery of the thyroid a "thyroid fever" following excision of that organ, and considered it due to the pouring into the circulation of thyroid secretion not yet elaborated, or altered by the pathological condition, or else modified by contact with the air. Whatever clinical analogy exists between thyroid fever and ovarian fever, Dr. Azara is of opinion that Chiarugi's explanation is not applicable to the latter. In the first place, the operative field in ovariectomy is altogether different as regards vascularity to the cervical, and, moreover, it is impossible to admit, however remotely, the pouring into the circulation of "ovarin," which by accumulating in excess in the organism would produce a febrile condition. Another theory, however, may be adduced to explain the ovarian fever. Starting with the conception that the ovaries have an internal secretion, and admitting that the so-called ovarin, a product of the corpus luteum, has a disintoxicant action on the organism, it follows that this action would be annulled by ablation of the ovaries and that the febrile condition would come to an end as soon as the organism had re-established a certain equilibrium by means of the compensative action of some other organ with internal secretion.

THE JARISH HERXHEIMER REACTION.

THE Herxheimer reaction consists in a focal, local, and general reaction supervening in syphilitics at the outset of treatment with antispecific agents. This reaction, when first described, applied more fittingly to mercury. It consisted in an aggravation of all the signs of the infection during the first days of treatment after two to five injections or inunctions. Herxheimer believed that the reaction existed solely during the second stage of syphilis, but since it has been more fully studied in relation to its occurrence following salvarsan it has been found that this reaction appears equally readily at all stages. The reaction, too, may be as varied as the forms of syphilis, cutaneous, visceral, or cerebral. Thus the chancre may enlarge rapidly. In the secondary stage there may be arthritis, headache, or even fever and meningitis; it is said that in the secondary stage 63 per cent. have a syphilitic meningitis, shown by leucocytosis of the cerebro-spinal fluid. Amongst tabetics the reaction takes the form of transitory aphasia, acute delirium, or shooting pains; or it may be barely noticeable. It was suggested that some part of the aggravation of symptoms might be due to the development of toxins derived from organisms in the diluting fluid used for the intravenous method, but this does not explain all the facts, as Dr. K. M. Benoit Simon points out in the *Canadian Practitioner and Review* (1914, vol. xxxix., p. 655). The reaction, in view of the gradual accumulation of fatal results after salvarsan (200 up to 1912), may deserve attention. Dr. Simon says that the reaction is proportionate to the intensity of the lesions; it is thus more marked in the secondary stage. It is also proportionate to the dose of the antisyphilitic drug and its specific activity. Two questions regarding the reaction may be asked: is it useful or is it noxious; and if the latter, is it preventable? 1. The reaction is useless—all agree on this; it is also injurious. the danger lying especially in the meningeal response. 2. The reaction is preventable. It is necessary first to seek dangerous localisations of the disease, especially a latent meningitis; lumbar puncture must be performed for the diagnosis of such a latent and potential source of trouble. Secondly, since a first dose must be blindly given, let it be the minimum which has never given accidents—that is, 0·2 gramme salvarsan for an adult—and watch. The temperature and the cerebro-spinal fluid being observed the dose can be increased gradually.

INTRA-ARTICULAR FIXATION OF FRACTURES.

WHILE the value of the fixation of fractures by apparatus inserted in the bone is established it is generally taught that no foreign substance should be inserted into joints. However, it has recently been shown that intra-articular fixation is possible. In the *Maryland Medical Journal* for December, 1914, Professor Nathan Winslow has reported two cases in which he performed this operation. A man, aged 50 years, had a fracture through the head and anatomical neck of the humerus in a bad position which could not be rectified by manipulation. An incision was made midway between the acromion and the coracoid processes extending 7 inches down the arm. The distal fragment was delivered through the incision. Then the head of the bone was separated from its capsule and entirely delivered from the body. The fragments were brought into apposition, but the upper was so shattered that it offered but little surface for plating. After some difficulty a very small plate was insecurely attached to the fragments. It was necessary to pass a wire nail through the articular surface into the shaft of the bone. The capsule was sutured, the wound closed, and

the arm encased in plaster. Sinuses leading to the head of the bone formed, and necessitated a second operation. The previous incision was opened and the plate with three screws removed. The capsule was then opened and the head of the bone disarticulated. Careful search failed to reveal the head of the nail. The sinus in the bone was therefore enlarged and the nail grasped at its point with forceps and pulled out. The sinus was curetted and drained. The patient recovered and had good motion in all directions except elevation. In the second case a coloured girl, aged 3 years, had separation of the lower humeral epiphysis. An attempt at reduction by hyperextension and flexion under ether was attended with indifferent success. An incision was made over the olecranon process down to the bone and the fragments were delivered after much trouble. As no surface presented extra-articularly through which nails could be passed and the fragments did not remain in apposition when released two small wire nails were passed from the articular surface through the epiphysis into the shaft. Three weeks after the operation there was some motion in the joint. The final result cannot yet be stated, but Professor Winslow believes that without operation function would have been seriously impaired. He claims that his cases show that intra-articular fractures which cannot be otherwise treated should be screwed or pegged from the articular surface, that the joint tolerates a foreign body provided infection does not occur, and that this method offers a better prospect than leaving the fragments in bad alignment.

ANÆSTHESIA IN GOITRE OPERATIONS.

THE problem of safe and satisfactory anæsthesia in operation for goitre may present more difficulty to the anæsthetist than is met perhaps in any other class of case. There are, of course, plenty of instances where in the absence of respiratory difficulty from pressure and of all symptoms of hyperthyroidism the choice and administration of the anæsthetic are at least as simple as in any other operation in the neighbourhood of the neck. When, however, there is narrowing of the trachea from pressure, or still more when there are marked tachycardia and other indications of hyperthyroidism, then the question becomes an anxious one. Still more, needless to say, is this the case when the patient presents to a marked degree the signs and symptoms of actual exophthalmic goitre. The mechanical difficulty in these cases may be regarded as that which is most easily obviated. It is, of course, true that any dyspnœa due to mechanical narrowing of the trachea is liable to be increased during anæsthesia by swelling of mucous membrane and congestion of vessels as well as by spasm. The avoidance of all closed methods of administration, however, the preliminary injection of atropine, and a gradual induction usually result in anæsthesia without any increased difficulty in such cases. The mechanical obstruction may be overcome with even greater certainty by the insufflation of ether through a tracheal catheter should the passage to this not be of itself a too difficult achievement. A much more difficult problem than the mechanical one is presented by the nervous condition of some of these patients and by their tendency to syncope during operation, or to an increase afterwards of the tachycardia till the heart finally runs down exhausted by its own rapidity. We do not know the essential cause of this fatal tachycardia, and cannot even declare positively that it is partly attributable to anæsthesia and not wholly to the effect of manipulation of the thyroid gland with increased entry of its secretion into the circulation. Dr. W. S. Bainbridge, who has recently discussed the question before the American Association of Anæsthetists, believes that fatalities of the kind described are more apt to occur after operations done during general than after those done with local anæsthesia. His preference for local agents in this class of case has the authoritative support of Kocher. The disadvantage of the presence of consciousness on the part of these sensitive, excitable patients is, however, not to be overlooked, and indeed Dr. Bainbridge himself points out that operating with local anæsthesia throws great strain upon the surgeon, and not infrequently is associated with discomforts, if not with pain, on the patient's part. These things, however, cannot be allowed to weigh seriously against any marked superiority from the point of view of safety, and if it can be clearly shown from comparing large numbers of cases that general anæsthesia involves the occurrence of more fatalities than local, then preference should surely be given to the latter method. The use of rectal and of infusion methods is obviously applicable to this class of case. The considerable inconvenience of the former and the oozing associated with the latter are, we imagine, their chief detriments. Moreover, in the case of infusion, any considerable addition to the amount of fluid in the circulation would not appear to be without detriment in the type of patient under consideration. Crile's well-known process of "stealing the thyroid" may meet the temperamental difficulties of the patient very well, but we cannot believe that sufficient calm cannot be induced, if it is possible at all, by quiet, tactful, and deliberate handling of the patient at the time of induction of anæsthesia without rehearsals.

THE ETIOLOGY OF CONGENITAL HYDROCEPHALUS.

THE old Neapolitan custom of treating chronic hydrocephalus by mercurial friction and the often favourable result obtained thereby, very justly gave rise to the suspicion that this morbid condition might be due to hereditary syphilis. It was rarely possible, however, to adduce evidence of specific infection in the parents. Recent biological methods have now proved that almost invariably chronic hydrocephalus owes its origin to parental syphilis. Former observers had already shown that among those diseases to which the congenital syphilitic is subject hydrocephalus occupies the chief place after idiocy and imbecility, but when Wassermann's test was applied to the etiology of hydrocephalus negative results seemed to discountenance any relation between it and hereditary syphilis. In 1912 Cannata, having made observations on 12 cases of congenital hydrocephalus, came to the conclusion that hereditary syphilis plays a more important part in the pathology of chronic internal hydrocephalus than has usually hitherto been admitted. In a new periodical issued by the medical staff of the lunatic asylum at Catanzaro, under the direction of Professor Frisco, two well-marked and instructive cases are recorded; in one the Wassermann reaction was positive both in the mother and child who was second born following a premature birth of a dead fœtus. In the second case the reaction was positive in father, mother, and child.

INTRAVENOUS TREATMENT OF ARTHRITIC PROCESSES.

THERE are certain positive advantages obvious to the intravenous methods of giving drugs. One is precision and accuracy of dosage with the certainty that the agent used will exert its effect unchanged by the disturbing factors which are necessarily associated with the ordinary absorptive processes from the gastro-intestinal tract. The other is rapidity of action. Advantages accruing from precision of dosage are especially seen in the salvarsan treatment, the necessity for such accuracy being obvious. The advantage of quickness of effect is most conspicuously noted, perhaps, in the intravenous injection of strophanthus in urgent cases of heart failure due to auricular fibrillation. It is natural that intravenous medication should have been tried in other conditions, and some success is claimed for this method of giving salicylates for refractory cases of acute rheumatism. Dr. Albert Comstock records the details of this form of treatment in certain articular diseases in the *New York Medical Journal* (vol. c., 1914, p. 1113). He uses the following prescription:—

℞ Guaiacolis—sodii salicylatis, ana gr. 640.
Glycerin ... ... gr. 640.
Aq. destill. et steril. ... ... 2000 c.c.

The conditions for which its intravenous use is indicated are acute articular rheumatism, acute and chronic muscular rheumatism, and acute gouty arthritis. The patient is suitably prepared and an aperient given. The quantity of the solution, at 100° to 110° F., used is 250 c.c. (*sic*). The vein is usually dissected out and the fluid slowly allowed to flow in. The first subjective sign noted is a tingling sensation, with a coal tar taste in the mouth, due to the guaiacol. The face then becomes suffused and congested and perspiration is free. There is generally slight delirium, which may last for half an hour. The pain, however, is relieved in a wonderful manner, and within 24 hours the patient is better. This relief is most marked and most permanent in acute rheumatism; in 50 cases there has been no bad result. In muscular rheumatism the result is not so good, and in the chronic form two or three injections may have to be made at intervals of three or four days. For cases where salicylates given in the ordinary way cannot be tolerated by the stomach or in particularly obstinate cases this intravenous method is recommended.

AT a meeting of the Council of the Royal College of Surgeons in Ireland held on Jan. 21st, Mr. F. Conway Dwyer, President, in the chair, Sir Arthur Chance was elected to represent the College at the meetings of the General Medical Council.

Dr. George Lovell Gulland, physician to the Edinburgh Royal Infirmary, has been appointed to the Chair of Medicine in the University of Edinburgh, vacant through the resignation of Professor John Wyllie.

AT a meeting of the Senate of the University of London held on Jan. 27th Dr. Edward Barclay-Smith, M.A., M.D., B.C. Camb., was appointed to the University Chair of Anatomy at King's College, London, and Dr. Edward Provan Cathcart, M.D., Ch.B., D.Sc. Glasg., was appointed to the University Chair of Physiology (as from April 1st next), tenable at the London Hospital Medical College.

THE CHADWICK LECTURES ON WAR AND DISEASE.[1]

THE second of three Chadwick lectures was delivered at the Royal Society of Arts on Jan. 22nd by Colonel F. M. SANDWITH, M.D. The chair was occupied by Sir FREDERICK TREVES, and there was a large attendance.

Presentation of Chadwick Prizes and Medals.

An interesting function preceded the delivery of the lecture—namely, the presentation to Fleet-Surgeon Cleveland Munday and Colonel Heaton Horrocks, R.A.M.C., of the Chadwick Medal and £50 for distinguished services in promoting the health of the men in the navy and army respectively.

Sir ARTHUR MAY, in thanking the Chadwick trustees for the honour they had conferred on the navy, said that when he entered the navy in 1878 the rate of sickness was 47 per 1000; to-day it was only 25, and the invalid-rate was now 15 as against 35 in 1878. In the latter year the death-rate in the navy was 6 per 1000, whereas to-day it was 2. The improvement was due to sanitation and the education of the men, for every sailor in the service attended lectures on personal hygiene.

Sir ALFRED KEOGH emphasised the importance of the health of the troops in the maintenance of an army's fighting strength, and said that Colonel Horrocks was the officer most responsible for the very satisfactory health of our army now in France, and his record extended back many years, the abolition from Malta of undulant fever having been due to him. Formerly there were in that island 600 or 700 men stricken with that disease; and hospitalisation alone cost £15,000 a year. To-day there was no fever. Colonel Horrocks had also done much steady work in improving the sanitation of camps and barracks.

Colonel SANDWITH then delivered a lecture on

The South African and the Russo-Japanese Campaigns.

He said the Japanese army medical officers held that there were three grades of illness: (*a*) comprising wounds or disease caused by hardships and exposure incidental to warfare; (*b*) diseases, accidents, or injuries to which the soldier might succumb in circumstances beyond his control; and (*c*) diseases brought about by disobedience to orders, immorality, the eating of unwholesome food, and the drinking of dirty water. The victim of the latter received no sympathy. Before the Russo-Japanese War the individual Japanese soldier was made to understand how largely his health contributed to the fighting efficiency of the army, and this was an important factor in the avoidance by that nation of serious epidemic disease during the campaign. This lesson had had its good effect on our own army, and the French admired the British troops in this war for their hygienic observances. No illness so dogged the steps of an army as did typhoid fever. For many years water contamination was thought to be the cause, but epidemics had occurred where the water-supply was excellent, and dust and flies had obviously to be blamed. He particularised the case of Quetta, which had an admirable water-supply. A striking instance was that which occurred in the camp at Modder River in the South African campaign. The winds covered the food with grit, and flies multiplied rapidly. The first case of typhoid fever was recognised on Dec. 18th, 1900, and by the end of that month 18 cases had been admitted into hospital. The Highland Brigade camp suffered the least because it was in a wind-protected locality. There was also great danger from the handling of food by typhoid carriers, some of whom had had the disease so slightly that it escaped recognition, especially in view of the necessary huddling of the men together in quarters during war time. The typhoid death-rate in civil life varies from 5 per cent. to 20 per cent.; among armies in war time the rate is much higher, owing to the absence of the best nursing facilities. In the South African War we lost 8022 from this disease, 19,454 were invalided, and 30,208 were either returned to duty or otherwise discharged. The mortality from typhoid fever in the war exceeded in number that of the men killed in action. Each

[1] A report of the first lecture appeared in THE LANCET of Jan. 23rd, p. 165.

case was under treatment an average of 56 days, and was necessarily a source of danger during the whole of that period. The conditions encountered by the army were greatly aggravated in the beleaguered city of Ladysmith, where the half-starved garrison had to draw its water-supply from a river known to be contaminated. During the 120 days of siege there were 1280 cases of typhoid fever, with 360 deaths; and 1841 cases of dysentery, with 105 deaths. When our troops entered Bloemfontein they found two churches filled with Boers suffering from typhoid fever. During the forced marching tents had to be pitched for the relief of about 130 men who collapsed from the effects of the heat. On Feb. 16th one brigade was marching and fighting for more than 15 hours. When the battle of Paardeburg began the men had been marching 24 hours, during which some had nothing to eat. The fighting lasted 12 hours. When, a week later, Cronje surrendered, among his force were 160 sick and wounded, including 10 cases of enteric fever. In 20 weeks from March to July there were 1134 deaths in Bloemfontein, of which 85 per cent. were due to typhoid fever. War could never be waged on land by hygienic methods; the supreme object was to defeat the enemy; but in anti-typhoid inoculation we had now a means of circumventing the danger. It was very gratifying to find that the soldiers were becoming more and more convinced of the efficacy of this preventive measure, and the vast majority of those on active service were now so protected. Typhoid fever was found to be five or six times as common in the non-inoculated as in the inoculated. At Avignon (France) in 1912 typhoid fever broke out in barracks containing 2053 men, of whom 1366 were protected. Of the 687 unprotected there were 155 who had the disease and 21 died, while among the protected there was not one case. In 1913 the French Senate resolved that the protective treatment should be made compulsory throughout the army. In Canada, among the camps of the Canadian Pacific Railway, 3500 men were protected, and only two cases of typhoid fever occurred; while among 4500 non-protected men there were 238 cases. In the face of such facts it was difficult to understand those who were trying to persuade the soldier not to submit to it. The lecturer proceeded to deal next with the case of dysentery and cholera, describing the course of these diseases and their method of spread, remarking that in the South African War there were 38,108 cases of dysentery,[2] the chief source having been the water-supply. In her war with China, Japan had 155,140 cases of dysentery, with 38,000 deaths. On Oct. 22nd last 98 cases of cholera were reported in Austria and 231 in Hungary. Cholera had also appeared in some of the Russian towns. Dr. Fleming and others were sent from this country to the Russian side to ascertain what particular kind of cholera bacillus was present; they had now returned and were, he believed, engaged in preparing a vaccine He had words of warm commendation to those British officers, including Sir Francis Wingate, who showed such heroism in combating the Egyptian cholera epidemic. In the Greek army the mortality among unvaccinated cholera patients was 275 in each 1000 cases of the disease; in the vaccinated 102 per 1000 cases. The British authorities were providing in every possible way against the invasion of cholera among our troops. The lecture was illustrated by very informing slides, including photo-micrographs of disease bacilli.

Sir FREDERICK TREVES, in proposing a vote of thanks to Dr. Sandwith, emphasised what he said regarding the attitude to be adopted towards typhoid fever in war. The education of the soldier on the question was most important. The second line of attack was the improvement of the sanitary condition of the army. Speaking as a member of the Sanitary Committee at the War Office, he could say there had never been a time in the history of any campaign when the wounded or sick soldier had been better looked after. But this was not all, for even medical men, versed in every detail of personal care and sanitation, had, when in charge of typhoid camps, contracted the disease. A further precaution was necessary—namely, inoculation. Since the present war began there had been in the British Expeditionary Force only 212 cases of typhoid fever, 201 of them in unprotected men, for 173 of them had not been inoculated at all; only 11 of this number had been fully inoculated. Not one inoculated man in the whole force had died from the disease. In the face of such facts those who tried to persuade the men not to submit to the measure were playing into the hands of the enemy. He also alluded, with much satisfaction, to the universality of motor transport in the present operations near the front. At the actual firing line, however, horse transport could not be dispensed with.

The vote of thanks to the lecturer was very heartily accorded.

[2] THE LANCET, Sept. 5th, 1914, p. 639.

THE SERVICES.

ROYAL NAVY MEDICAL SERVICE.

THE following appointments have been notified:—Staff-Surgeon: N. B. V. Jacob to the *Pembroke*, additional, for disposal. Temporary Surgeons: H. O. Blanford to the *Roxburgh*; S. L. Harke to the *Impregnable*; and A. M. Gray to the *Woolwich*.

The undermentioned have been granted temporary commissions as Surgeons in His Majesty's Fleet:—John Grandisson Watkins, Purser Davies, Lionel Frederick Strugnell, and David Sutherland.

The following Surgeon Probationers, R.N.V.R., have been entered as Temporary Surgeons, R.N.:—H. G. Moser and L. S. Fry.

ROYAL NAVAL VOLUNTEER RESERVE.

Surgeon Probationers: G. Pearson to the *Blake*, additional, for the *Goldfish*; and W. L. Hunter.

ROYAL ARMY MEDICAL CORPS.

Honorary Major Guy N. Stephen to be temporary Lieutenant-Colonel (dated Jan. 10th).

To be temporary Captains:—Dated Dec. 29th, 1914: Charles Edward Forbes Mouat-Biggs. Dated Jan. 4th: Robert Sturgeon Cocke.

Peter Macdiarmid is granted temporarily the honorary rank of Captain (dated Jan. 27th).

To be temporary Lieutenants:—Dated Dec. 9th, 1914: Arthur Vernon Stocks. Dated Dec. 18th, 1914: James Stewart Hall and Hugh Llewellyn Apthorp. Dated Dec. 22nd, 1914: James Edward Cook. Dated Dec. 29th, 1914: Frederick Pearson Fisher. Dated Dec. 31st, 1914: John Samuel Martin, John Gibson, and Ronald Bute Macfie. Dated Jan. 4th: Arthur Hyde Greg. Dated Jan. 5th: James Edmund Rutherfurd, Dated Jan. 6th: Charles Edward Pepper. Dated Jan. 7th: James Donald Finlay, Andrew Grant, George Douglas Sherwood, Thomas Lister Llewellyn, Bernard Creasy Ewens, John Laing Annan, Wilfred Garton, George Henry Steven, Dudley Forde, Albert Ernest Hodgson, James Joseph Keirans, and John Lang. Dated Jan. 8th: Henry Percy Harpur and James Fettes.

SUPPLEMENTARY TO REGULAR UNITS OR CORPS.

Royal Army Medical Corps.

The undermentioned to be Lieutenants (on probation):—Francis Antrobus Duffield, John Joseph Molyneaux, Frederic Sanders, George Stephen Pirie, Edwin John Bradley, Frank Oppenheimer, James Walker Wood, and George Macdonald Scott.

TERRITORIAL FORCE.

Honourable Artillery Company.

"A" Battery, 1st City of London Horse Artillery: Surgeon-Lieutenant-Colonel and Honorary Surgeon-Colonel Richard J. Reece is seconded.

Royal Army Medical Corps.

1st Wessex Field Ambulance: Walter Fitzpatrick (late Captain, Royal Army Medical Corps, Territorial Force) to be Captain (temporary).

2nd Highland Field Ambulance: Lieutenant James A. Stephen to be Captain (temporary). Thomas Stewart Slessor to be Lieutenant.

3rd Southern General Hospital: Lieutenant-Colonel Horatio P. Symonds resigns his commission on account of ill-health.

2nd West Riding Field Ambulance: Hartas Foxton to be Lieutenant.

1st London (City of London) Sanitary Company: Robert Robison to be Lieutenant.

West Lancashire Casualty Clearing Station: Lieutenant William N. W. West-Watson, from 3rd West Riding Field Ambulance, to be Lieutenant.

West Riding Casualty Clearing Station: David Rutherford Cramb to be Lieutenant.

Sanitary Service: Thomas Hamilton Ward (late Lieutenant, Royal Army Medical Corps, Territorial Force) to be Captain, whose services will be available on mobilisation.

Attached to Units other than Medical Units.—Major Alexander Leitch resigns his commission on account of ill-health, and is granted permission to retain his rank and

to wear the prescribed uniform. Surgeon-Captain Thomas Duncan Greenlees (late Grahamstown (South Africa) 1st City Volunteers) to be Major (temporary). Captain William E. Rielly, from 2nd London Field Ambulance, to be Captain. Lieutenant John B. Bate to be Captain (temporary). Lieutenant James P. N. Casey, from 1st London Field Ambulance, and Hugh Gilbert Bruce to be Lieutenants.

ORDER OF ST. JOHN OF JERUSALEM.

The King has sanctioned the promotion to Knight of Grace of Lieutenant-Colonel William Ernest Jennings, I.M.S.

VITAL STATISTICS.

HEALTH OF ENGLISH TOWNS.

IN the 96 English and Welsh towns with populations exceeding 50,000 persons at the last census, 8172 births and 6259 deaths were registered during the week ended Saturday, Jan. 23rd. The annual rate of mortality in these towns, which had been 21·3, 19·4, and 18·8 per 1000 in the three preceding weeks, further fell in the week under notice to 18·0 per 1000 of their aggregate population, estimated at 18,134,239 persons at the middle of 1914. The annual death-rate last week ranged from 6·6 in Eastbourne, 8·0 in Ilford, 9·6 in Coventry, 10·5 in Acton, and 10·9 in Southport and in Blackpool, to 25·3 in Gateshead, 27·1 in Cambridge, 31·9 in Merthyr Tydfil, 36·3 in Great Yarmouth, and 37·5 in Gillingham.

The 6259 deaths from all causes were 286 fewer than the number in the previous week, and included 479 which were referred to the principal epidemic diseases, against numbers declining from 575 to 454 in the three preceding weeks. Of these 479 deaths, 206 resulted from measles, 93 from whooping-cough, 83 from diphtheria, 62 from infantile diarrhœal diseases, 23 from scarlet fever, and 12 from enteric fever, but not one from small-pox. The mean annual death-rate from these diseases was equal to 1·4, or 0·1 per 1000 more than in the previous week. The deaths attributed to measles, which had been 269, 183, and 195 in the three preceding weeks, further rose to 206 last week, and caused the highest annual death-rates of 2·1 in Newcastle-on-Tyne, 2·2 in Ealing, in Wolverhampton, and in Preston, 2·5 in Merthyr Tydfil, 3·1 in Gateshead, 3·2 in Rotherham, 3·3 in Grimsby, 3·7 in Plymouth, and 4·0 in Wigan. The deaths referred to whooping-cough, which had been 80, 93, and 76 in the three preceding weeks, rose to 93 last week, and included 22 in London, 8 in Bristol, 5 each in Willesden, Liverpool, and Merthyr Tydfil, 4 in Stoke-on-Trent, and 3 each in Gloucester, Nottingham, Newcastle-on-Tyne, and Cardiff. The fatal cases of diphtheria, which had been 89, 77, and 63 in the three preceding weeks, rose to 83 last week; of these 8 each occurred in London and Birmingham, 7 in Bristol, 5 each in Manchester and Sheffield, 4 each in Warrington and Leeds, and 3 each in Bradford and Stockton-on-Tees. The deaths of infants (under 2 years) attributed to diarrhœa and enteritis, which had been 86, 84, and 75 in the three preceding weeks, further declined to 62 last week, and included 14 in London, 8 in Birmingham, and 3 each in Preston and Gateshead. The deaths referred to scarlet fever, which had been 31, 35, and 34 in the preceding three weeks, fell to 23 last week, of which 5 occurred in Liverpool and 4 in London. The fatal cases of enteric fever, which had been 20, 15, and 11 in the three preceding weeks, were 12 last week, and included 2 in London.

The number of scarlet fever patients under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospital, which had steadily declined from 5035 to 3952 in the eight preceding weeks, had further fallen to 3836 on Saturday last; 308 new cases were admitted during the week, against 436, 321, and 338 in the three preceding weeks. These hospitals also contained on Saturday last 1643 cases of diphtheria, 109 of measles, 56 of enteric fever, and 35 of whooping-cough, but not one of small-pox. The 1597 deaths from all causes in London were 104 fewer than in the previous week, and corresponded to an annual death-rate of 18·4 per 1000. The deaths referred to diseases of the respiratory system, which had been 562, 497, and 472 in the three preceding weeks, further fell to 417 in the week under notice, and were 3 below the number in the corresponding week of last year.

Of the 6259 deaths from all causes in the 96 towns, 252 resulted from different forms of violence and 545 were the subject of coroners' inquests, while 1667 occurred in public institutions. The causes of 62, or 1·0 per cent. of the total deaths, were not certified either by a registered medical practitioner or by a coroner after inquest. All the causes of death were duly certified in Leeds, Bristol, West Ham, Bradford, Newcastle-on-Tyne, Nottingham, and in 59 other smaller towns. Of the 62 uncertified causes 13 were registered in Birmingham, 6 in Liverpool, 4 each in Stoke-on-Trent, Preston, and Gateshead, and 2 each in Ilford, Dudley, Bootle, Bolton, and Manchester.

HEALTH OF SCOTCH TOWNS.

In the 16 largest Scotch towns with an aggregate population estimated at 2,345,500 persons at the middle of this year, 1258 births and 977 deaths were registered during the week ended Saturday, Jan. 23rd. The annual rate of mortality in these towns, which had been 20·5, 24·5, and 22·8 per 1000 in the three preceding weeks, further declined to 21·7 per 1000 in the week under notice. Among the several towns the death-rate ranged from 12·5 in Motherwell, 14·2 in Coatbridge, and 15·2 in Falkirk, to 25·3 in Aberdeen, 25·9 in Dundee, and 29·4 in Perth.

The 977 deaths from all causes were 50 fewer than in the previous week, and included 98 which were referred to the principal epidemic diseases, against 117 and 92 in the two preceding weeks. Of these 98 deaths, 58 resulted from whooping-cough, 16 from scarlet fever, 8 from diphtheria, 8 from infantile diarrhœal diseases, 7 from measles, and 1 from enteric fever, but not one from small-pox. The mean annual death-rate from these diseases was equal to 2·2, against 1·4 per 1000 in the large English towns. The deaths attributed to whooping-cough, which had increased from 28 to 56 in the four preceding weeks, further rose to 58 last week, of which 37 occurred in Glasgow, 11 in Dundee, 6 in Edinburgh, and 2 in Motherwell. The deaths referred to scarlet fever, which had been 17, 13, and 9 in the three preceding weeks, rose to 16 last week, and included 8 in Glasgow and 3 each in Aberdeen and Paisley. The fatal cases of diphtheria, which had been 14, 21, and 10 in the three preceding weeks, further fell to 8 last week, of which 4 were registered in Glasgow and 2 in Edinburgh. The deaths of infants (under 2 years) attributed to diarrhœa and enteritis, which had been 11, 17, and 7 in the three preceding weeks, were 8 last week, and included 3 in Glasgow. The 7 deaths referred to measles comprised 6 in Dundee and 1 in Glasgow, and were equal to the number recorded in each of the two preceding weeks. The fatal case of enteric fever was registered in Glasgow.

The deaths referred to diseases of the respiratory system, which had steadily increased from 154 to 275 in the six preceding weeks, fell to 233 in the week under notice; 30 deaths resulted from different forms of violence, against 32 and 35 in the two preceding weeks.

HEALTH OF IRISH TOWNS.

In the 27 town districts of Ireland with an aggregate population estimated at 1,212,380 persons at the middle of this year, 665 births and 557 deaths were registered during the week ended Saturday, Jan. 23rd. The annual rate of mortality in these towns, which had been 27·8, 26·5, and 24·4 per 1000 in the three preceding weeks, further fell to 24·0 per 1000 in the week under notice. The annual death-rate last week was equal to 27·7 in Dublin (against 18·4 in London and 22·2 in Glasgow), 20·2 in Belfast, 37·4 in Cork, 19·0 in Londonderry, 12·2 in Limerick, and 26·6 in Waterford, while in the 21 smaller towns the mean death-rate was 21·9 per 1000.

The 557 deaths from all causes were 11 fewer than the number in the previous week, and included 35 which were referred to the principal epidemic diseases, against 38 and 48 in the two preceding weeks. Of these 35 deaths, 15 resulted from measles, 9 from whooping-cough, 4 from infantile diarrhœal diseases, 3 from scarlet fever, 2 from enteric fever, and 2 from diphtheria, but not one from small-pox. The mean annual death-rate from these diseases was equal to 1·5, against 1·4 and 2·2 per 1000 in the English and Scotch towns respectively. The deaths attributed to measles, which had been 9, 6, and 12 in the three preceding weeks, further rose to 15 last week, and included 11 in Belfast. The deaths referred to whooping-cough, which had been 7, 11, and 10 in the three preceding weeks, were 9 last week, and comprised 6 in Dublin, 2 in Belfast, and 1 in Cork. The fatal cases of diarrhœa and enteritis (among infants under 2 years), which had increased from 9 to 14 in the four preceding weeks, fell to 4 last week, and included 2 in Dublin. The 3 deaths attributed to scarlet fever occurred in Belfast, the deaths from diphtheria in Dublin and Sligo, and the fatal cases of enteric fever in Dublin and Limerick.

The deaths referred to diseases of the respiratory system, which had been 162, 139, and 164 in the three preceding weeks, fell to 137 in the week under notice. Of the 557 deaths from all causes, 177, or 32 per cent., occurred in public institutions, and 8 resulted from different forms of violence. The causes of 28, or 5·0 per cent., of the total deaths were not certified either by a registered medical practitioner or by a coroner after inquest; in the English towns the proportion of uncertified causes did not exceed 1·0 per cent.

ANALYSIS OF SICKNESS AND MORTALITY STATISTICS IN LONDON DURING DECEMBER, 1914.

(Specially compiled for THE LANCET.)

CITIES AND BOROUGHS.	Estimated population in the middle of 1914.	NOTIFIED CASES OF INFECTIOUS DISEASE.											DEATHS FROM PRINCIPAL INFECTIOUS DISEASES.								Deaths from all causes.	Death-rate per 1000 living.†
		Small-pox.	Scarlet fever.	Diphtheria.*	Typhus fever.	Enteric fever.	Other continued fevers.	Puerperal fever.	Erysipelas.	Cerebro-spinal meningitis.	Poliomyelitis.	Total.	Annual rate per 1000 persons living.	Small-pox.	Measles.	Scarlet fever.	Diphtheria.*	Whooping-cough.	Enteric fever.	Diarrhœa and enteritis (under 2 years).	Total.	Annual rate per 1000 persons living.		
LONDON	4,516,612	—	2416	951	—	78	6	24	512	5	7	3999	9·2	—	224	47	101	49	9	112	542	1·3	7246	16·7
West Districts.																								
Paddington	142,055	—	71	17	—	3	—	—	16	—	—	107	7·9	—	1	1	2	—	—	6	10	0·7	204	14·9
Kensington	170,817	—	75	24	—	—	—	—	16	—	—	115	7·0	—	5	3	2	—	—	1	11	0·7	246	14·9
Hammersmith	124,750	—	108	39	—	1	—	1	14	—	—	163	13·6	—	17	1	5	4	1	2	30	2·5	200	16·5
Fulham	158,849	—	108	45	—	5	—	5	23	—	—	186	12·2	—	10	5	6	6	—	6	33	2·2	243	16·5
Chelsea	63,791	—	31	8	—	4	—	—	2	—	—	45	7·4	—	1	—	—	—	—	—	1	0·2	101	15·7
City of Westminster	152,346	—	87	31	—	7	2	—	10	—	—	137	9·4	—	2	2	4	1	2	1	12	0·8	214	15·4
North Districts.																								
St. Marylebone	112,892	—	43	20	—	4	—	—	6	—	—	73	6·7	—	—	—	4	1	1	4	10	0·9	152	14·3
Hampstead	86,731	—	21	11	—	1	—	2	6	—	—	41	4·9	—	—	—	—	—	—	—	—	—	105	13·3
St. Pancras	212,497	—	93	44	—	4	—	2	17	—	—	160	7·8	—	12	2	4	2	—	4	24	1·2	376	18·4
Islington	324,764	—	184	46	—	2	—	2	41	—	—	275	8·8	—	12	4	4	4	—	8	32	1·0	541	17·0
Stoke Newington	50,454	—	25	7	—	—	—	—	5	—	—	37	7·6	—	—	2	—	—	—	—	2	0·4	79	15·5
Hackney	223,724	—	76	39	—	4	2	1	22	—	1	145	6·8	—	44	2	3	1	—	9	59	2·8	392	18·4
Central Districts.																								
Holborn	45,861	—	15	6	—	—	—	—	1	—	—	22	5·0	—	—	1	1	1	—	—	3	0·7	95	21·7
Finsbury	83,212	—	37	23	—	1	—	—	12	—	—	73	9·1	—	—	3	1	5	—	1	10	1·3	187	23·1
City of London	17,129	—	10	6	—	3	—	—	2	—	—	21	12·8	—	—	—	—	—	—	1	1	0·6	26	16·5
East Districts.																								
Shoreditch	108,369	—	37	41	—	5	1	—	19	—	—	103	9·9	—	6	—	4	1	1	6	18	1·7	207	20·5
Bethnal Green	127,662	—	83	48	—	2	—	—	32	—	—	165	13·5	—	11	1	5	—	—	4	21	1·7	226	19·2
Stepney	273,265	—	227	112	—	11	—	2	41	—	1	394	15·0	—	18	7	12	—	1	11	49	1·9	525	20·9
Poplar	160,222	—	58	20	—	—	—	—	24	—	—	102	6·6	—	6	—	2	—	—	9	17	1·1	321	20·7
South Districts.																								
Southwark	186,941	—	100	25	—	1	—	2	33	1	1	163	9·1	—	18	3	5	3	—	8	37	2·1	349	19·6
Bermondsey	124,213	—	41	20	—	3	—	—	7	1	—	72	6·0	—	6	—	—	2	1	6	15	1·3	204	17·1
Lambeth	296,724	—	147	78	—	2	—	—	19	2	3	251	8·8	—	26	1	6	3	—	6	42	1·5	501	17·3
Battersea	167,338	—	87	20	—	3	—	—	14	—	—	124	7·7	—	6	2	2	1	—	2	13	0·8	229	14·4
Wandsworth	338,998	—	184	48	—	2	—	2	32	—	—	268	8·2	—	1	—	5	5	—	5	16	0·5	388	12·0
Camberwell	262,020	—	131	41	—	1	1	3	30	—	—	207	8·2	—	12	2	4	1	1	7	27	1·1	351	13·8
Deptford	109,182	—	82	26	—	1	—	1	18	—	1	129	12·3	—	1	2	4	5	—	1	13	1·2	175	16·5
Greenwich	96,037	—	61	20	—	—	—	—	13	—	—	94	10·2	—	—	2	3	1	—	1	7	0·8	184	19·7
Lewisham	172,433	—	128	43	—	4	—	—	19	—	—	194	11·7	—	—	1	5	1	—	3	10	0·6	226	13·5
Woolwich	122,836	—	66	43	—	4	—	1	18	1	—	133	11·3	—	9	—	8	1	1	—	19	1·6	199	17·3
Port of London	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

* Including membranous croup. † The death-rates are corrected for variations in sex and age constitution of the populations of the several boroughs, the population of England and Wales being taken as the standard.

VITAL STATISTICS OF LONDON DURING DECEMBER, 1914.

In the accompanying table will be found summarised complete statistics relating to sickness and mortality in the City of London and in each of the metropolitan boroughs. With regard to the notified cases of infectious diseases, it appears that the number of persons reported to be suffering from one or other of the 10 diseases specified in the table was equal to an annual rate of 9·2 per 1000 of the population, estimated at 4,516,612 persons in the middle of last year; in the three preceding months the rates were 11·6, 14·0, and 12·5 per 1000 respectively. The lowest rates last month were recorded in St. Marylebone, Hampstead, Hackney, Holborn, Poplar, and Bermondsey; and the highest rates in Hammersmith, Fulham, the City of London, Bethnal Green, Stepney, and Deptford. The prevalence of scarlet fever showed a marked decline from the high numbers in the two preceding months; the greatest proportional prevalence of this disease last month was recorded in Hammersmith, Fulham, Stepney, Deptford, and Lewisham. The Metropolitan Asylums Hospitals contained 4431 scarlet fever patients at the end of last month, against 4561 and 4956 at the end of the two preceding months; the weekly admissions averaged 445, against 618 and 661 in the two preceding months. Diphtheria also was less prevalent than in either of the two preceding months; this disease was proportionally most prevalent last month in Hammersmith, Fulham, Finsbury, the City of London, Shoreditch, Bethnal Green, Stepney, and Woolwich. There were 1663 diphtheria patients under treatment in the Metropolitan Asylums Hospitals at the end of last month, against 1489 and 1630 at the end of the two preceding months; the weekly admissions averaged 177, against 213 and 247 in the two preceding months. The prevalence of enteric fever, which had shown a decline in November, increased again last month; the greatest proportional prevalence of this disease was recorded in Chelsea, the City of Westminster, St. Marylebone, the City of London, Shoreditch, and Stepney. The number of enteric fever patients under treatment in the Metropolitan Asylums Hospitals, which had been 65 and 63 at the end of the two preceding months, rose again to 68 at the end of last month; the weekly admissions averaged 10, against 11 and 9 in the two preceding months. Erysipelas was proportionally most prevalent in Fulham, Finsbury, Shoreditch, Bethnal Green, Stepney, Poplar, Southwark, Deptford, and Woolwich. The 24 cases of puerperal fever notified during the month included 5 in Fulham, 3 in Camberwell, and 2 each in Hampstead, St. Pancras, Islington, Stepney, Southwark, and Wandsworth. The 5 cases of cerebro-spinal meningitis included 2 in Lambeth, where 3 of the 7 cases of poliomyelitis also occurred.

The mortality statistics relate to the deaths of persons actually belonging to the several boroughs, the deaths occurring in institutions having been distributed among the boroughs in which the deceased persons had previously resided; the death-rates from all causes are further corrected for variations in the sex and age constitution of the populations of the several boroughs. During the five weeks ending Jan. 2nd the deaths of 7246 London residents were registered, equal to an annual rate of 16·7 per 1000; in the three preceding months the rates were 15·5, 14·1, and 14·6 per 1000 respectively. The death-rates last month ranged from 12·0 in Wandsworth, 13·3 in Hampstead, 13·5 in Lewisham, 13·8 in Camberwell, 14·3 in St. Marylebone, and 14·4 in Battersea, to 19·6 in Southwark, 19·7 in Greenwich, 20·5 in Shoreditch, 20·7 in Poplar, 20·9 in Stepney, 21·7 in Holborn, and 23·1 in Finsbury. The 7246 deaths from all causes included 542 which were referred to the principal infectious diseases; of these, 224 resulted from measles, 47 from scarlet fever, 101 from diphtheria, 49 from whooping-cough, 9 from enteric fever, and 112 from diarrhœa and enteritis among children under 2 years of age. No death from any of these infectious diseases was recorded last month in Hampstead; among the other boroughs they caused the lowest death-rates in Chelsea, Stoke Newington, the City of London, Wandsworth, and Lewisham; and the highest rates in Hammersmith, Fulham, Hackney, Southwark, Stepney, Shoreditch, and Bethnal Green. The 224 deaths from measles were 35 above the corrected average number in the corresponding period of the five preceding years; this disease was proportionally most fatal last month in Hammersmith, Hackney, Bethnal Green, Southwark, and Lambeth. The 47 fatal cases of scarlet fever were 28 in excess of the corrected average, the greatest proportional mortality from this disease being recorded in Fulham, Stoke Newington, Finsbury, and Stepney. The 101 deaths from diphtheria were 48 above the corrected average number; this disease was proportionally most fatal in Hammersmith, Fulham, St. Marylebone, Shoreditch, Bethnal Green, Stepney, Deptford, and Woolwich. The 49 fatal cases of whooping-cough were 19 fewer than the corrected average; the highest death-rates from this disease last month were recorded in Hammersmith, Fulham, Finsbury, and Deptford. The 9 deaths from enteric fever were 6 below the corrected average, and included 2 in the City of Westminster. The mortality from diarrhœa and enteritis among children under 2 years of age was proportionally greatest in Paddington, Hackney, Shoreditch, Stepney, Poplar, Southwark, and Bermondsey. In conclusion, it may be stated that the aggregate mortality in London last month from the principal infectious diseases was 25 per cent. above the average.

IRISH MEDICAL ASSOCIATION AND THE CASE OF MR. NATHANIEL MAYNE.—At a meeting of the Council of the Irish Medical Association held last week a resolution was passed unanimously, protesting against the attempt of the governing body of the County Longford Infirmary to dismiss Mr. Mayne from the office of surgeon to the infirmary, and declaring that in the opinion of the Council Mr. Mayne had acted properly and prudently and in accordance with the rules of the institution.

ROYAL MEDICAL BENEVOLENT FUND.—The annual general meeting of subscribers to this fund will be held at 15, Wimpole-street, W., on Tuesday, Feb. 9th, at 4 P.M. The chair will be taken by the President, Sir John Tweedy, LL.D., F.R.C.S. Eng.—At the last meeting of the committee 22 cases were considered, and grants amounting to £202 voted to 19 of the applicants. An annuity of £20 was also made to one of the applicants. The following is a summary of the cases relieved:—

Wife, aged 48, of M.R.C.S. Eng. who practised at Chesham. Was deserted by her husband in 1905. Has three children, the youngest at Epsom College, others at school. Eyesight defective. Only income about £25 per annum. Previous relief £14. Voted £12 in 12 instalments.—Widow, aged 74, of M.R.C.S. Eng. who practised at Braintree. Lives with married son, who has large family and only a small income. No income of her own and unable to work. Was elected to an annuity of £20 per annum. Previously relieved, £2.—Widow, aged 66, of M.R.C.S. Eng. who practised at Heywood, Lancs. Has acted as cook and nurse, but finds it difficult in consequence of age to obtain work. Previous relief, £2. Voted £12 in 12 instalments.—Widow, aged 30, of M.B., B.S. Lond., R.A.M.C. who was killed at the front. Since husband's death has undergone severe operation and quite unable to work at present. Only income War Office pension. Voted £15 towards convalescence.—Widow, aged 67, of M.D. St. And. and F.R.C.S. Eng. who practised at Kidderminster. Present distress caused by the depreciation of securities and the death of her sister with whom she lived. Health bad. Voted £10 in two instalments.—Widow, aged 34, of M.R.C.S. Eng. who practised at Swansea and died in 1914. Left her totally unprovided for. Right side paralysed. One daughter aged 6 years. Lives with mother whose means are very limited. Voted £12 in 12 instalments.—Widow, aged 62, of L.R.C.S. Edin. who practised in Brixton. Present distress caused by depreciation of her dividends and being unable to let her furnished house. Health too bad to allow her to work. Voted £10 in two instalments.—Daughter, aged 59, of M.R.C.S. Eng. who practised at Battle. Unable to work owing to chronic rheumatism. Lives with sister, who is also badly off. Relieved 31 times. £242. Voted £12 in 12 instalments.—Widow, aged 77, of M.R.C.S. Eng. who practised at Leamington. Tries to earn a little by taking in lodgers, but owing to age not able to do much. Has the Old Age Pension. Has seven children, none of whom can help. Relieved three times. £36. Voted £12 in 12 instalments.—Widow, aged 58, of L.R.C.P. Irel. who practised at Buckley. Health very indifferent. Only income a pension from another charity of £25. Relieved seven times. £84. Voted £12 in 12 instalments.—Daughter, aged 31, of M.R.C.S. Eng. who practised at Wolverhampton. Suffers from Graves's disease and unable to undertake any permanent work. Relieved seven times, £46. Voted £12 in 12 instalments.—Widow, aged 58, of M.R.C.S. Eng. who was an annuitant of the Fund. Eldest son used to keep the home but has joined the army and unable to do much. Other son's earnings very much reduced. Relieved once £10. Voted £2, with leave to apply again.—Daughter, aged 62, of M.R.C.S. Eng. who practised at Watford. Health bad. Only income £20 from another charity and a little from sewing. Has to assist to keep an invalid brother. Relieved eight times, £93. Voted £15 in 12 instalments.—Widow, aged 58, of M.R.C.S. Eng. who practised at Sydney, N.S.W. Has own house, which is heavily mortgaged and has been empty for five years. Only daughter a professional singer, but owing to the war cannot obtain engagements. Relieved three years ago, £10. Voted £10 in two instalments.—Daughter, aged 70, of M.R.C.S. Eng. who practised at Stoke Newington. Lives with two sisters and they try to make a living by taking in boarders, but in consequence of the war have lost several foreign boarders. Relieved twice, £24. Voted £18 in 12 instalments and recommended for an annuity.—Widow, aged 68, of M.R.C.S. Eng. who practised at Maidstone. Earns her living by taking in paying guests, but in consequence of the war has lost two. Only income from friends, which is uncertain, about £20. Relieved four times. £30. Voted £12 in 12 instalments.—Daughter, aged 60, of M.R.C.S. Eng. who practised at Greenwood Hantspils. Health very bad, and lost all her money invested in an apartment house. Earns a little by needlework and friends provide food. Relieved four times. £48. Voted £12 in 12 instalments.—Widow, aged 65, of L.S.A. who practised at Battersea. Lost all capital in investments. Takes in a boarder when she can get one and earns a little by needlework. Relieved twice, £24. Voted £12 in 12 instalments.

Contributions may be sent to the honorary treasurer, Dr. Samuel West, 11, Chandos-street, Cavendish-square, W.—Queen Amélie will preside at the annual general meeting of the Royal Medical Benevolent Fund Guild, at the Royal College of Physicians of London, on Thursday, Feb. 4th, at 3 30 o'clock.

ITALY.

(FROM OUR OWN CORRESPONDENT.)

The Medical Officers of the Army Reserve.

HERE, as everywhere else, the war is the only subject of real interest. The Italian army is mobilised, and for the extra medical service required the medical officers of the reserve of the 1877–78 classes have been called up. These are professional men, 36–38 years of age, and they are rather indignant that the younger classes should not have been called up before them. They protest, too, at the inferior position in which they find themselves, being allowed only the rank of subalterns whatever their professional attainments may be, and so junior in rank to officers of perhaps 24 years of age; in fact, a professor may find himself junior in rank to, and under the orders of, his own pupil. They find themselves on an equality with and obliged to "tutoyer" young subalterns of the other arms of the service, often 20 years their juniors. The duties of orderly officer fall chiefly upon them. They are losing the practices which they have built up by many years of work, and in return are paid by the Government at the rate of 5.53 lire, or 4*s.* 6*d.* per day. They demand that they should be allowed the rank to which the majority of the regular officers of their year have attained, while allowing the latter seniority in such rank. Their grievances seem natural enough; do they find an echo among the largely increased staff of the British Royal Army Medical Corps?

Treatment of Tetanus.

The treatment of tetanus is at this moment a very living question. *Il Policlinico* (Sez. Prat., anno xxi., fasc. 51) returns once more to its advocacy of Baccelli's treatment, or the method of the Roman school. This consists in the injection, either subcutaneously or intramuscularly, of carbolic acid. Solutions varying in strength from 1 to 5 per cent. were used in the cases quoted in the paper, and the quantity of carbolic acid given in 24 hours varied between 20 and 80 centigrammes. For example, one case was treated by subcutaneous injections of 2 c.c. of a 3 per cent. solution every three hours, increased later to a similar quantity of 5 per cent. solution; another received from 24 to 34 cgm. of carbolic acid in 2 per cent. solution daily; another from 40 to 70 c.c. of 1 per cent. solution per diem intramuscularly. Baccelli's method is said to have given extremely encouraging results up to now among the wounded in France. It is well tolerated and under easy control, and has the great merit of simplicity.

Heliotherapy and the Treatment of Wounds.

The wonderful results of sun treatment in the mountain resorts of Switzerland have set the profession in Italy thinking how they may make use of the sun, which is theirs so freely. A start in the right direction was made years ago with the institution of seaside and mountain colonies for delicate children in the summer months. The number of these is on the increase every year, and some of the seaside colonies are now kept open in winter as well as summer. A more direct use of the sun's rays is made by Professor Poli, who has opened this year a sunny terrace overlooking the sea at Genoa for the treatment of children with surgical forms of tuberculosis. An extension of this idea is advocated along the Italian Riviera, and it is claimed that not only are cases of surgical tuberculosis benefited by this heliotherapy but that experiences after the Balkan War have demonstrated beyond doubt the curative effects of the sun's rays in suppurating wounds such as those produced by shrapnel. I fancy that no one would deny that heliotherapy has at least as much effect upon the organisms of suppuration as upon tubercle bacilli, and that most would agree that it is likely to be as safe and quick as, and a great deal more pleasant than, the ordinary methods of treatment of suppurating wounds.

White Slave Traffic.

The Neapolitan police seem to have awakened recently to the flagrant violation of the laws relating to the abuse of young girls. In one night they raided 15 so-called hotels and pensions, restored 73 young girls between the ages of 13 and 19 to their families, and arrested 280 individuals as "sfruttatori di minorenni." The large number of people implicated has made a great impression and drawn public attention to the scandal. Something, it is felt, must be done, and not only in Naples but for all the south of Italy, where the trade in young girls and their export to foreign countries are carried on upon a large scale and with impunity.

Jan. 22nd.

Correspondence.

"Audi alteram partem."

BELGIAN PRACTITIONERS AND THE MEDICAL REGISTER.

To the Editor of THE LANCET.

SIR,—In pursuance of the Order in Council dated Jan. 7th, 1915, by which the Medical Act, 1886, was made applicable to the kingdom of Belgium, the Executive Committee of the General Medical Council has passed the following resolution:—

That so long as the Order in Council of Jan. 7th, 1915, remains in force any person who produces evidence satisfactory to the Registrar that he has obtained the degree of Doctor of Medicine in any of the Belgian Universities of Brussels, Ghent, Liége, or Louvain, and is legally authorised to practise medicine, surgery, and midwifery in Belgium, and who satisfies the Registrar as to the other particulars specified in Section 12 of Part II. of the Medical Act, 1886, shall be entitled to be registered in the Foreign List of the Medical Register.

It is necessary, according to the provisions of the Medical Act, 1886, that any person applying to be registered in respect of the degree of M.D. of any of the above-mentioned universities should produce to the Registrar documents or certificates as follows: (1) Evidence that he possesses the diploma of M.D.; (2) satisfactory evidence of identity; (3) satisfactory evidence of good character; and (4) satisfactory evidence: (*a*) that the applicant is not a British subject, or (*b*) that being a British subject, the said diploma was granted to the holder at a time when he was not domiciled in the United Kingdom or in the course of a period of not less than five years, during the whole of which he resided out of the United Kingdom; or he was practising medicine or surgery or a branch of medicine or surgery in the United Kingdom on

Jan. 7th, 1915, and that he had continuously practised the same either in the United Kingdom or elsewhere for a period of not less than ten years immediately preceding Jan. 7th, 1915.

Application should be made to the Registrar for a form for the use of Belgian practitioners seeking registration. Belgian practitioners who fulfil the prescribed conditions may thereupon, without further examination, be inscribed in the British Register, and acquire all the rights and privileges of duly qualified British practitioners.

The documents, the prescribed fee (Five pounds), and the cost (One shilling) of the Government stamp, should be transmitted to the Registrar of the General Medical Council, 299, Oxford-street, London, W.—I am, Sir, yours faithfully,

A. J. COCKINGTON,
Jan. 27th, 1915. Acting Registrar.

THE PREVENTION OF FROST-BITE.

To the Editor of THE LANCET.

SIR,—There are some points in the prevalence of frost-bite affecting the Expeditionary Force which are worthy of careful consideration with a view to prevention. In the first place it is not mere cold that produces frost-bite. The attacks with our soldiers are limited almost entirely to the feet, from the minor degrees in the form of chilblains through all the further stages up to positive gangrene. If we look to the accounts of Arctic and Antarctic experience we find frost-bite mostly in exposed parts—face and hands—and chiefly accounted for by the prevalence of wind in association with low temperature. When the feet have been attacked it has mostly been in association with wet. In the trenches, in which frost-bite is almost exclusively met with, the conditions present are those of water or mud slush with low temperature; a temperature, however, far above the highest met with in the Arctic or Antarctic winters. Further conditions to which frost-bite is attributable are long maintenance of the upright posture with general fatigue and lowered vitality from exposure. It is obvious, however, that amongst the important contributory causes must be mentioned: (1) any tightness of leg gear causing a constriction of circulation; and (2) ill-fitting boots having the same effect. If the precautions mentioned by Mr. A. W. Mayo-Robson as laid down in the Army Medical Regulations be observed these latter causes will be obviated.[1] No doubt sound and more or less water-tight boots are of some value; but it practically is the case that the soldiers are ofttimes well over their boots in water or slush, so that the soundness of the boot in this respect is of little avail. It has been suggested that the men in the trenches should wear water-tight thigh boots something after the fashion of those used by our sewer inspectors. But it should be remembered that the men must be fit at any moment for skirmishing, quick marching, or hand-to-hand fighting, in all of which foot agility is of the utmost importance. In a charge or bayonet encounter foot work is as important as in boxing or fencing, and to handicap feet and legs by cumbrous boot gear would be to sacrifice the men's efficiency and often their lives to the comfort of their feet.

Returning to the etiology of this matter, I would point out that frost-bite in the present war is due (1) to the feet becoming sodden with water and their circulation and vitality thus depressed; and (2) to long exposure to a considerable degree of cold, a degree, however, to which the dry foot would be resistant. In the rational treatment of such cases with a view to prevention it is of the first importance to render the feet less permeable to moisture. This indication may be best met by their anointment with some greasy material with low hygroscopic properties. It is well known to swimmers that anointing with fatty or oily material enables them to withstand cold, but the value of an application of low hygroscopic power for persons whose feet are passively subjected for hours or days to water or half-frozen slush is, perhaps, not sufficiently realised.

Mr. Squire, of Oxford-street, has prepared a foot ointment answering the four requirements: (1) resistant to water penetration; (2) mildly stimulating and antiseptic; (3) readiness for use; and (4) not too expensive. After a good deal of trouble and investigation he has produced an ointment of purified suet, camphorated and with 5 per cent. eucalyptus oil, supplied on the pattern of a shaving stick in a metal case with smooth rounded edges. The solid ointment is pushed up from the bottom, and when rubbed over the surface leaves a smooth application of the ointment. A special advantage of this ointment is that its absorbing power for water is only 5 per cent., whereas most other greasy materials, such as lard, lanoline, &c., have an absorbent power for water of about 30 per cent. Mr. Squire has also prepared on the same lines a second ointment from palm oil sufficiently stiffened for the purpose but containing only vegetable ingredients, so as to meet the requirements of our Indian troops, to whom all animal fats are repugnant.

A limited trial of the first ointment has given so far satisfactory results, but it is, of course, too early to draw practical conclusions. Meanwhile "the rain it raineth every day" and the cold is bitter for our officers and men.

I am, Sir, yours faithfully,
Portland-place, W., Jan. 25th, 1915. R. DOUGLAS POWELL.

[1] THE LANCET, Jan. 16th, 1915, p. 119.

FAITH AND ASTIGMATISM.

To the Editor of THE LANCET.

SIR,—I envy Mr. C. E. Pronger and Mr. Ernest Clarke, whose communications have recently appeared in THE LANCET. What a happy state of mind to be in to be sure! To be able to cure or relieve headache, neuralgia, sleeplessness, fits, and a tendency to insanity and suicide, *et hoc genus omne*, and all with just a pair of spectacles, cylindrical lenses for choice, varying in strength from half a diopter to one-eighth thereof. I wish I could do it myself. Years ago, when at Wiesbaden, the present Professor Pagenstecher told me that many of the English-speaking patients who consulted him, when asked what was the matter replied, "Oh, I have astigmatism," so much so that he called it the English complaint. They do not seem to be troubled so much with the same affection on the continent, or perhaps their "Kultur" does not extend to the diagnosis thereof. It is the lower grades of astigmatism which are said to cause all these dire symptoms, and the uneven contraction of the ciliary muscle, in its effort to equalise matters and overcome this, is the *fons et*

origo malorum; where the astigmatism is greater no effort of the ciliary muscle can overcome the irregularity and so it gives up the effort as a bad job and does not try. Now astigmatism is for the most part congenital, and one would naturally be inclined to think that the ciliary muscle, trained to this slight unevenness of focusing from its earliest youth, would have got used to it, and that the higher centres would not have been so much upset thereby.

My own position is often difficult. Being fairly broad-minded, disinclined to split hairs, and taking an all-round point of view of things, I have gradually come to the conclusion that human nature is very complex, that other organs and structures besides the eyes are to be found above the collar-bone, and that a pair of spectacles, however rose-coloured, will not cure all the ailments to which our flesh is heir. Over and over again have I had patients sent to me by physicians—who seem to have swung of late years from one extreme of the pendulum to the other—with symptoms of headache and neuralgia, &c., in and about the eyes and their neighbourhood, in whom, after carefully working out their refraction, I have found ½ or ¼ diopter of astigmatism, and in view of their symptoms have corrected this and ordered them glasses for constant wear, but I have so often failed in relieving the symptoms for which they consulted me that I have got into the habit of reminding them that the proof of the pudding is in the eating thereof, that the slight error of focus I have discovered may be a factor in the production of their symptoms or not; that if it is, the glasses will be calculated to relieve their symptoms, and in that case they had better continue to wear them constantly, but failing relief after a fair three months' trial they can leave them off or only use them for near work and reading. But, *me miserum!* how few have been relieved thereby? Logically, where are we to draw the line? If we are to relieve 1/8 diopter of astigmatism, why not 1/80?

But here, again, another difficulty steps in. Personally, I find many—perhaps most—patients unable to appreciate the effect of a ¼ diopter cylinder; it makes very little, if any, difference to them whether it is held vertically or horizontally, &c. What, then, about a cylinder of much less strength? Still, I really believe that some neurotic or neurasthenic people are honestly relieved by weak cylindrical or spherical lenses, and I have in view the case of a friend—an optician, strange to say—who at times wore weak ¼ diopter cylindrical lenses and claimed he obtained relief thereby. I did not prescribe them; he was gouty, very excitable, neurasthenic, the subject of cancer, and by no means a teetotaler. It is mainly or entirely in people with a crank or neurotic or neurasthenic, who admit that these trifling corrections relieve them. They are people who are easily impressed, and coming into contact with ophthalmic surgeons of marked personality, after being examined in the dark room and with various weird apparatus and instruments, are told they have astigmatism—a word which, like that blessed one Mesopotamia, appeals to their feelings—and that glasses will in all probability relieve or cure them. A positive is worth three negatives. Thereupon they go off with a prescription with a clock-work face and strange figures and hieroglyphics to some optician, who probably makes the remark that the glasses the doctor has prescribed are very unusual—as indeed they are, if they are 1/8 diopter cylinders—the result being that they feel something is being done for them, and their symptoms are relieved forthwith, and they think and say they derive much comfort from their glasses—for a time, when they either relapse and go elsewhere, or meanwhile their general health improves, or they get married or take up Christian Science or something, and all goes well; they, at any rate, put down their cure to the oculist. But the end is not always so favourable, and the patient drifts from one ophthalmic surgeon to another.

I have no objection whatever to any oculist impressing a neurotic patient with weak spherical or cylindrical lenses—with such patients, as in love and war, it is fair to adopt almost any means to give them relief—but I do object to anyone thinking or assuming that it is the weakness of the cylindrical or spherical lens that does the trick. I have arrived at this conclusion after an experience of over 28 years' considerable practice as an ophthalmic surgeon amongst all sorts and conditions of patients, and the longer I live the more convinced I am of the correctness of the old Latin maxims, "Media sunt simillima veris" and "In medio tutissimus ibis"; and now, to add to my doubts and fears and misgivings, comes this letter from Dr. A. S. Gubb pointing out, as it does, that insomnia is due to many trifling causes, amongst which a loaded rectum plays a not inconsiderable part. Really, it will in the future be difficult to know which end of the patient to begin with, and whether a pair of spectacles or a glycerine suppository should have the priority, for many of these patients are the subjects of constipation.

I am, Sir, yours faithfully,

Norwich, Jan. 17th, 1915. S. JOHNSON TAYLOR, M.B

THE PHARMACOPŒIAL DOSE.

To the Editor of THE LANCET.

SIR,—Mr. W. J. Uglow Woolcock's suggestion in his letter in THE LANCET of to-day's date relative to unusually large doses in prescriptions of powerful drugs has the great disadvantage of acquainting the patient or his friends that an unusually large dose of an active drug is prescribed. My practice is to mark the quantity both on the right and left of the drug, and if necessary to underline the quantity marked on the left of the name of the drug.

I am, Sir, yours faithfully,

Dublin, Jan. 23rd, 1915. GEORGE FOY.

PHYSIOLOGY AND MORALITY.

To the Editor of THE LANCET.

SIR,—In his admirable lecture published in your issue of Jan. 23rd Mr. D'Arcy Power, discussing the best means of preventing the spread of venereal disease, says:—

> Knowledge, too, is a powerful help. The physiology of the generative system is no more a mystery than the physiology of digestion or respiration, and there is no reason why it should not be explained in a scientific manner as a part of a course of biology. Let the women teach the women ..... .

I would ask, in reference to this suggestion, whether a knowledge of the physiology of the generative system has had any influence in preventing the male medical student in the past from exposing himself to venereal infection? My experience has been that the smattering of physiology taught to nurses and masseuses is worse than useless. In this, as in other things, a little knowledge is a

dangerous thing: it often leads them to talk a lot of sorry nonsense to their patients.

Speaking for myself, I can truly say that my knowledge of physiology has not in any way helped me to lead a healthy life. All that the public need know in regard to the preservation of health can be set down in a surprisingly small compass. To attempt to disseminate a knowledge of physiology—be it of the generative or any other system—is, in my belief, to mix up the issues in a jangle of mere words, and to obscure what is after all transparently simple. I am, Sir, yours faithfully,

Wimpole-street, W., Jan. 23rd, 1915. HARRY CAMPBELL.

ANATOLE FRANCE AND MORALITY.

To the Editor of THE LANCET.

SIR,—Mr. D'Arcy Power's lecture in your issue of to-day is admirable in every way, but it is strange to find the works of Anatole France recommended as food for the chaste.

The finest stylist of present-day French literature is one of the "unmorals," and there are only one or two of his books which do not contain descriptions of intimate amatory relationships, clothed in beautiful but none the less smutty language. France is an artist pure and simple, and decidedly not for *la jeune fille* or her brother. These remarks apply to the works in the original. I have no knowledge of the English translations, but have often heard them described as poor.

I am, Sir, yours faithfully,

A. M. ROSS, M.B.

Waterfoot, near Manchester, Jan. 23rd, 1915.

EMETINE INJECTIONS IN AMŒBIC DYSENTERY.

To the Editor of THE LANCET.

SIR,—It may be of interest to record results of the treatment of amœbic dysentery by hypodermic injections of emetine hydrochloride in an out-patient practice. In the space of 11 months 27 cases were treated and in all cases the symptoms quickly disappeared and the patients were so struck with the result that they came back for more injections even after they were apparently cured. We commenced with injections of gr. $\frac{1}{3}$ which was given on dispensary days—i.e., three times a week—but soon the dose was raised to gr. $\frac{1}{2}$, gr. $\frac{2}{3}$, and lastly to gr. 1. The majority of cases received gr. 1 at each injection with most satisfactory results. Gr. 1 gave the best and quickest result and no untoward result was ever complained of or observed. It is interesting to note that once, when the stock of hypodermic tabloids had run short, a half-grain tabloid of emetine was given internally, and when the patient was next seen he reported that on his way home he had severe vomiting and diarrhœa. As all were treated as out-patients they could not be restricted to a liquid diet. All the cases except one were chronic, lasting from one month to four years. The number of motions averaged about ten in the 24 hours; two had 16 and one 30 motions. All patients showed remarkable improvement after the first or second injection; the hæmorrhage greatly decreased or stopped altogether, straining was much less or quite gone, the number of motions considerably diminished, and the stools became fæcal. The pallor disappeared, and the pained expression of the face entirely altered after a few injections. As a rule no other drug was given, and the majority of cases had no symptoms of the disease after four or five injections. In the case which had lasted four years all symptoms disappeared after the third injection of 1 gr. emetine hydrochloride. Two cases had recurrence of their symptoms and came back for treatment about three weeks after the cessation of the emetine injections. One of these cases had a third relapse after six months, when he attended the dispensary for a week, and had three 1 gr. injections and was apparently cured. We are, Sir, yours faithfully,

F. J. HARPUR, M.B.
W. B. HADDAD. M.D.

Church Missionary Society, Achmoun Menoufeyah, Egypt.

LEECHES AND THE WAR.

To the Editor of THE LANCET.

SIR,—Our country has been for many months suffering from a serious shortage of leeches. As long ago as last November there were only a few dozen leeches left in London, and they were second-hand.

Whilst General Joffre, General von Kluck, General von Hindenburg, and the Grand Duke Nicholas persist in fighting over some of the best leech areas in Europe, possibly unwittingly, this shortage will continue, for we have for many years largely depended on importations from France and Central Europe.

In November I made some efforts to alleviate the situation by applying to America and Canada, but without success. I then applied to India, and last week, owing to the kindness of Dr. Annandale, director of the Indian Museum at Calcutta, to the officers of the Peninsular and Oriental Steamship Company, and to Colonel A. Alcock, M.D., of the London School of Tropical Medicine, I have succeeded in landing a fine consignment of a leech which is used for blood-letting in India. It is true that the leech is not the *Hirudo medicinalis* of our pharmacopœias, but a different genus and species, *Limnatis granulosa*. Judging by its size, always a varying quantity in a leech, we may have to readjust our ideas as to a leech's cubic capacity, yet I believe, from seeing them a day or two ago, they are willing and even anxious to do their duty. They have stood the voyage from Bombay and the changed climatic conditions very satisfactorily, and are in a state of great activity and apparent hunger at 50, Wigmore-street, London, W.

It is true that leeches are not used to anything like the extent they were 80 years ago—Paris alone about 1830 employed some 52 millions a year—but still they are used, though in much smaller numbers. It may be of some consolation to my fellow-countrymen to know that our deficiency in leeches is more than compensated by the appalling shortage of sausage-skins in Middle Europe. With true German thoroughness they are trying to make artificial ones. I am, Sir, yours faithfully,

A. E. SHIPLEY.

Christ's College Lodge, Cambridge, Jan. 27th, 1915.

THE ASYLUM SERVICE AND BELGIAN REFUGEE DOCTORS.

To the Editor of THE LANCET.

SIR,—It is stated in the *Daily Telegraph* of Jan. 20th that the Commissioners hope soon to have Belgian doctors available for employment in the asylum service. Both editorially and in many

letters to your columns it was shown that long before the war was thought of British practitioners in sufficient numbers could not be found to take up these posts owing to their many disabilities. Are the Commissioners—or, to give them their latest title, the Board of Control—to import "foreign cheap labour" for this purpose? We all, I hope, sympathise with our Belgian brethren, but it is a serious menace indeed if they are to be used to cheapen the service at the expense of Britishers. It may be the asylum service to-day, but be sure it will not stop there.

I am, Sir, yours faithfully,

Jan. 21st, 1914. VERB. SAP.

THE "SHORTAGE" OF DOCTORS.

To the Editor of THE LANCET.

SIR,—There is one phrase used by Dr. Robert R. Rentoul in his letter in THE LANCET of Jan. 16th which I cannot allow to pass unchallenged—viz., "The school medical officer whose duties are very light." I am a school medical officer to a county education authority. My experience as a medical man extends over 17 years, and includes hospital and other institution appointments, a ship's surgeoncy, active service, and private practice at home and abroad.

I can definitely state that my present duties are not light, and, further, that the circumstances attendant on professional work—travelling, &c.—have never been so continuously arduous.

My card is enclosed.

I am, Sir, yours faithfully,

Jan. 24th, 1915. M.B.

THE medical profession will note with satisfaction that Sir Donald MacAlister, K.C.B., President of the General Medical Council, and Dr. A. E. Shipley, F.R.S., Master of Christ's College, Cambridge, have been appointed members of the new Royal Commission to inquire into the methods of making appointments and promotions in the Civil Service.

CENTRAL MIDWIVES BOARD.—A special meeting of the Central Midwives Board was held at Caxton House, Westminster, on Jan. 20th, Sir Francis H. Champneys being in the chair. A number of midwives were struck off the roll, the following charges amongst others having been brought forward: The midwife did not wash the patient's external parts with soap and water or swab them with an efficient antiseptic solution before making the first internal examination, as required by Rule E. 7 (a); neglecting to provide for the comfort and cleanliness of the patient, as required by Rule E. 11; that when called to a confinement the midwife did not take with her the appliances and antiseptics required by Rule E. 2. That notwithstanding having been warned and with intent to avoid supervision and inspection by the local supervising authority the midwife abstained from notifying the authority of her intention to practise as a midwife; not being scrupulously clean in every way, and not keeping her nails cut short, as required by Rule E. 1; administering vaginal injections by means of an appliance used for giving enemata, contrary to Rule E. 2; not taking and recording the pulse and temperature of patients, as required by Rule E. 13, and making false records of the temperature of patients. The placenta and membranes not having been completely expelled within two hours after the birth of the child, the midwife did not explain that the case was one in which the attendance of a registered medical practitioner was required, nor did she hand to the husband or the nearest relative or friend present the form of sending for medical help, properly filled up and signed by her, in order that this might be immediately forwarded to the medical practitioner, as required by Rule E. 20 (3); neglecting to stay with the patient until the expulsion of the placenta, as required by Rule E. 6, and not keeping the register of cases as required by Rule E. 23.

THE BELGIAN DOCTORS' AND PHARMACISTS' RELIEF FUND.

THE subscriptions to the Fund have been fairly maintained during the week, the international interest in the Fund has been shown in several ways, and contributions or communications from the colonies and provincial centres have been promising. The first meeting of the Scottish Committee, whose personnel was published in THE LANCET and *British Medical Journal* at the beginning of the month, took place last Saturday, and the support at once given is sure to be maintained. We announced last week a notable contribution from the doctors in Dunedin, who have sent a lump sum of 100 guineas to the Fund, a donation which has been received with particular pleasure.

In the Sheffield district all the medical men have been given notice of a general meeting to be held at the University of Sheffield with the object of forming a local committee.

A meeting in aid of the Fund will be held in the College of Medicine, Newcastle-on-Tyne, on Feb. 17th, at 4 P.M., when Professor Jacobs, of Brussels, will deliver an address. All medical men and pharmacists in the districts of Northumberland, Durham, and Yorkshire are invited to attend, and a local committee will be appointed at the meeting.

THE CENTRAL COMMITTEE.

A meeting of the central committee was held on Thursday, Jan. 21st, at the offices of the British Medical Association, when Sir Rickman Godlee explained the satisfactory results of personal visits to the American Ambassador and Mr. Herbert Hoover in respect of the distribution of the parcels of medical stores sent out to Belgium through the medium of the International Committee for Relief in Belgium. American assistance is taking a similar form to that devised by the Central Committee. Sir Rickman Godlee also reported that a box of instruments which had been selected by Mr. Meredith Townsend and himself, with assistance in certain directions, was packed ready for the Belgian doctors, since which definite instructions have been received from the International Committee with regard to the transmission of the box. At this meeting of the Central Committee Dr. H. A. Des Vœux, the honorary treasurer, announced that the total amount subscribed was over £5000, though part of this sum had not been received yet by the treasurer.

THE SCOTTISH COMMITTEE.

The first meeting of the Scottish Committee was held in the Royal College of Physicians, Edinburgh, on Jan. 23rd, Dr. J. Barlow, President of the Royal Faculty of Physicians and Surgeons of Glasgow, being in the chair. The meeting confirmed the appointment of the secretaries and treasurers who had previously been provisionally appointed. An executive committee was appointed consisting of the presidents of the three medical corporations, the three secretaries of the Scottish Committee—viz., Dr. R. Cranston Low, Dr. J. Walker Downie, and Mr. J. Rutherford Hill—and Mr. J. L. Ewing, LL.D.

Dr. J. Adams intimated that the British Medical Association was willing and eager to do all in its power to aid the Fund, and it was agreed that the

organisation of the Association should be utilised so as to get into touch with the members of the medical profession all over Scotland. Similarly, Dr. Ewing put the organisation of the Pharmaceutical Society at the disposal of the committee, so as to press the claims of the Fund on the members of the pharmaceutical profession.

The executive committee was authorised to draw up a circular containing an appeal for contributions and send it to every medical man and pharmacist in Scotland. It was announced that up to the present subscriptions amounting to £257 had been received in sums varying from 1 to 20 guineas.

Contributions are being received by the treasurers Dr. Norman Walker, 7, Manor-place, Edinburgh; Dr. R. McKenzie Johnston, 2, Drumsheugh-gardens, Edinburgh; Dr. W. G. Dun, 15, Royal-crescent, Glasgow, W.; and Mr. J. Rutherford Hill, Resident Secretary, Pharmaceutical Society, Edinburgh.

THE BIRMINGHAM COMMITTEE.

The activity of the Birmingham Committee is another feature to which attention may be called. A local committee has been formed here with the following as a strong executive: Mr. Gilbert Barling, M.B., F.R.C.S., Vice-Chancellor of the University (Chairman); Dr. Purslow, President of the Birmingham Branch of the British Medical Association; Mr. Christopher Martin, M.B., F.R.C.S., President of the Birmingham Medical Institute; Professor Kauffmann, President of the Midland Medical Society; Dr. Lilley, Chairman of the Central Division of the Birmingham Branch of the British Medical Association; Professor Saundby; Sir Thomas Barclay, J.P.; Mr. E. W. Mann, B.Sc., F.I.C., President of the Birmingham Pharmaceutical Association; Mr. J. Poole; Mr. J. A. Radford; Mr. F. Smith, Honorary Secretary of the Birmingham Pharmaceutical Association; and Mr. J. Wakefield. An eloquent circular has been distributed in the district calling attention to the Central Committee which has been formed in London, composed of representative English doctors and pharmacists, to raise money for the immediate relief of members of these professions who are remaining in Belgium, acting in coöperation with a Belgian Committee having similar aims. Professor Saundby, Mr. Gilbert Barling, and Sir Thomas Barclay have joined the Central Committee already. The circular of the Birmingham Committee recapitulates the chief points in the speech made by Professor C. Jacobs, of Brussels (head of the Red Cross Society in Belgium), at the meeting of the Edinburgh Obstetrical Society on Dec. 9th, 1914.[1] Professor Jacobs's story loses nothing in terror from condensation, and it is not surprising that the Birmingham circular should have met with immediate response.

"Subscriptions for any amount," says the circular, "will be gratefully accepted, but only actual payments can be acknowledged. Cheques or postal orders should be sent to Dr. Saundby, 140B, Great Charles-street, Birmingham, or to Mr. F. Smith, 221, Soho-road, Handsworth, who are acting as joint honorary treasurers and secretaries. They should be drawn in favour of the 'Belgian Doctors' and Pharmacists' Relief Fund' and crossed 'Lloyds Bank.'"

[1] THE LANCET, Dec. 19th, 1914, p. 1440.

DANISH UNION OF DOCTORS.

The following is an analysis of the subscriptions which have been received from this society through Dr. V. Christophersen, who is acting as honorary secretary to the Danish Fund:—

	Kr.
Ugeskrift for Laeger	100
Herr C. Mundt	20
Herr F. Sadolin	10
Herr T. C. Vöhtz	100
O. K.	100
Herr M. Krag	5
K. B.	5
Herr H. Adsersen	20
Herr A. J. Mathiesen	10
Herr Frock-Jansen...	20
Herr J. Kaarsberg	10
Herr P. Pedersen	10
Herr J. Lemche	10
Herr Leop. Meyer	500
Herr V. Hertel	100
Herr N. G. Ernst	50
Herr C. Vogel	10
Herr K. Lundh	15
Herr A. Kampegaard	15
Herr V. Scheel	20
Herr V. Bie	20
Herr V. Christophersen ...	20
Herr Rendtorff	50
S.	20
Herr Aa. Klär	50
Herr L. Melchior	20
Herr Gjellerup	10
Herr C. G. Hedegaard	20
Herr J. A. Bang	10
Herr L. Möller...	20
Herr W. Jessen	10
Herr H. Bing	20
Herr S. Monrad	50
Herr B. Meyer	20
Herr Dehlholm	25
Herr V. Poulson	50
Herr E. Pedersen	30
Herr S. Christensen	20
Herr H. Golderlund	25
Herr V. Wille	5
Herr J. Jessen	10
Herr G. Schleisher	10
Herr Yusjong	10
Herr A. Meyer	50
Herr G. Pryde...	25
Herr J. Lunddahl	15
N. W.	5
Herr J. Ostenfeld	20
Herr G. Schroll	20
Herr P. Vermebron	50
Herr H. J. Panner...	25
Fr. Karen Schlanbusch ...	15
Herr I. Schlanbusch	15
Total	Kr. 1985 = £103 7s. 8d.

The following subscriptions to the Fund have been received by Dr. Des Vœux up to Tuesday evening last, in addition to subscriptions amounting to £4040 previously acknowledged, and not including money received by the Scottish or Irish Funds:—

	£	s.	d.
Dr. Greville Macdonald	10	10	0
Dr. Peter H. Abercrombie	5	5	0
Major Horace C. Colman, R.A.M.C. (T.)	1	1	0
Dr. W. L. Pethybridge	1	1	0
Dr. L. J. Hobson	1	1	0
Mr. A. P. Dodds-Parker	2	2	0
Mr. J. E. Burton	2	2	0
Mr. A. Bruce Roxburgh	3	3	0
Dr. Harold Swale	3	3	0
Mr. J. J. Giles...	0	10	6
Mr. Maurice F. Squire	1	1	0
Henry Wells Oil Co. ...	1	1	0
Dr. B. Farquharson ...	2	2	0
Dr. Arthur G. Phear ...	5	5	0
Dr. W. Pasteur	5	5	0
Mr. E. M. Corner	3	3	0
Mrs. Scharlieb...	5	5	0
Mr. Henry Juler	5	0	0
Dr. Harrington Sainsbury	3	3	0
Mr. Arthur Cheatle ...	5	5	0
Danish Union of Doctors (per Dr. Christopherson, Hon. Sec.)	103	7	8
Dr. J. R. Macilwaine ...	2	2	0
Mrs. Dawson Williams...	1	0	0
Dr. W. Hale White ...	5	5	0
Dr. Alfred Parkin	1	1	0
Dr. John B. Eddison ...	5	5	0
Dr. D. A. Alexander ...	1	17	4
Dr. Alex. Macphail ...	1	1	0
Dr. R. Percy Smith ...	5	0	0
Dr. T. Wakefield	2	2	0
Mr. R. Lake	10	10	0
Dr. Ettie Sayer	1	1	0
Sir William Whitla ...	5	0	0
Messrs. Coleman and Co.	5	5	0
Dr. C. M. Chadwick ...	3	3	0
Colonel H. H. Johnston, A.M.S.	1	0	0
Dr. John Stewart	2	2	0
Dr. Gould May	3	3	0
Mr. Victor Bonney ...	2	0	0
"R. L. G."	1	1	0
Dr. L. G. Nash	1	1	0
Dr. J. C. Baker	1	1	0
Dr. J. J. Pringle	5	5	0
Messrs. Allen and Hanburys	26	5	0
Mr. Alfred Wright ...	0	5	0
Ross and Cromartie Division, B.M.A. (per Dr. E. H. Mackenzie, Hon. Sec.)—Dr. Smith, Dr. Cameron, Dr. Mackenzie, Dr. Dunsan, Dr. Johnstone, Dr. Ross, Dr. M., Dr. Somerville, Dr. Macrae	4	9	0
Warrington Division, B.M.A. (per Dr. J. A. Murray, Hon. Sec.)—Dr. Sutherland ...	0	10	6
Mr. Wm. R. Brown ...	1	1	0
Dr. Herbert B. Gibbins	1	1	0
Dr. F. R. Miller	2	0	0
Dr. E. J. Hawkins... ...	1	1	0
Mr. J. B. Ferguson Wilson	1	1	0
Mr. W. M. Mollison ...	5	5	0
Dr. T. Wilmot...	1	1	0
Sir John F. H. Broadbent, Bart.	5	5	0
Dr. H. Campbell Thomson	2	2	0
Mr. T. P. Legg...	3	3	0
West Somerset Division, B.M.A. (per Mr. W. B. Winkworth)—Mr. R. Henry F. Routh	1	1	0
Mr. Arthur W. Ormond	5	5	0
Dr. Jas. Bannerman ...	1	1	0
Dr. G. F. Still	10	0	0
West Herts Division, B.M.A. (per Dr. K. J. Aveling, Hon. Sec.)—Dr. A. N. Boycott ...	1	1	0
Dr. S. G. Scott	3	0	0
Brussels Medical Graduates Association (per Dr. Major Greenwood, Treas.), further donation	2	2	0
Sir W. S. Church, Bart.	5	5	0
Birmingham Local Committee (per Dr. Robert Saundby)—Dr. Harry C. Dixey	5	5	0
Dr. Sam H. Agar ...	3	3	0
Dr. Hamilton Morton	3	3	0
Dr. Ernest J. Beards	2	2	0
Dr. J. F. G. Pietersen	2	2	0
Mr. D. Priestley Smith	1	1	0
Dr. Harold S. White	1	1	0
Dr. Richard Drury	1	1	0
Dr. H. W. Jacob ...	1	1	0
Dr. Cecil Roscrow ...	1	1	0
Dr. G. A. Wilks ...	1	1	0
Dr. A. B. Creak ...	1	1	0
Dr. W. H. Garbutt	1	1	0
Dr. F. N. Deakin ...	1	1	0
Dr. Cyril P. Burd ...	1	1	0
Dr. H. Hubert Tipping	1	1	0
Dr. J. Ward	1	1	0
Dr. H. Troughton Bond	1	0	0

	£	s.	d.
Dr. and Mrs. W. Cassels (proceeds of Whist Party) ...	9	15	0
Dr. Wilfred Glegg...	1	1	0
Mr. H. Anglin Whitelock	3	3	0
Dr. Rufus E. Evans ...	2	2	0
Dr. Thomas Procter ...	1	0	0
Dr. Lloyd Francis	0	10	6
Dr. Albert Carless	5	0	0
Mr. Hugo Wolff	1	0	0
Messrs. Exell Bros. ...	0	10	6
Messrs. A. G. Hancock, Limited	1	1	0
Mr. J. F. Dickenson ...	1	1	0
Mr. G. H. Dawson... ...	1	1	0
Messrs. Whysall and Son	0	10	6
Miss A. I. Tufnell	0	10	0
Mr. J. W. Cussons... ...	0	10	6
Mr. J. J. Webb	0	10	0
South-East London Pharmacists' Association. Result of Whist Drive (per Mr. W. T. Tucker)	6	15	0
Sheffield Pharmaceutical and Chemical Society (per Mr. H. Antcliffe)	5	5	0
Messrs. Clay and Abraham	5	0	0
Mr. C. Symes	1	1	0
Mr. D. G. Pout	0	10	6
Birmingham Pharmaceutical Association (per Mr. F. Smith, Hon. Sec.), second donation—			
Messrs. Southall Bros. and Barclay	25	0	0
Mr. J. A. Radford ...	5	0	0
Mr. F. Barlow... ...	2	2	0
Mr. J. T. Bell	1	1	0
Mr. T. H. Foden ...	1	1	0
Mr. F. J. Keene ...	1	1	0
Mr. A. B. Jenson ...	1	0	0
Mr. B. B. Powell ...	0	12	6
Mr. J. H. Haines ...	0	10	6
Mr. G. L. Scott ...	0	10	6
Mr. F. R. Smallman	0	10	6
Mr. A. C. Stanford	0	10	6
Miss Cuthbertson ...	0	10	0
Mr. W. Keeling ...	0	10	0
Mr. E. Paul	0	10	0
Mr. A. Akam	0	5	0
Mr. C. E. Dallow ...	0	5	0

Subscriptions to the Fund should be sent to the treasurer of the Fund, Dr. H. A. Des Vœux, at 14, Buckingham-gate, London, S.W., and should be made payable to the Belgian Doctors' and Pharmacists' Relief Fund and crossed Lloyds Bank, Limited. These will be acknowledged by post direct, and a list will appear in THE LANCET weekly.

THE APPEAL FOR SURGICAL INSTRUMENTS.

The Master of the Society of Apothecaries acknowledges with thanks the receipt of surgical instruments kindly contributed by the following donors since the publication of the last list:—

Mr. Brown, per the Weybridge Cottage Hospital; Dr. W. A. B. Young, Blackburn; Mr. F. Lett, Hastings; Dr. B. Lewis Paton, Rugeley, Staffs.; Mrs. K. E. Raston, Ashford, Barnstaple; Doctors resident in the Barnsley area of the B.M.A., per Dr. R. F. Castle, Darfield.

The War.

THE BRITISH RED CROSS SOCIETY.—The summary of the work for the week ending Jan. 23rd states that since the last report there have been despatched to Calais 4 lorries, to Boulogne 2 motor cycles, 1 lorry, and 1 soup kitchen, and 4 ambulances to various places in England.

The number of auxiliary home hospitals accepted by the War Office is now 705, containing beds for 19,576, including 417 beds accepted during the past week. In Netley Hospital there are now 180 British, 194 Indians, and 6 Belgians. Arrangements are being made to accommodate the Japanese Red Cross surgeons and nurses in two of the hospital huts. The Lord Iveagh "Irish Hospital" extension is progressing.

During the week the expeditions to Serbia and Montenegro were despatched under the supervision respectively of Mr. James Berry and Dr. F. G. Clemow. Sir Thomas Lipton's generosity in regard to these units has been very great.

The total number of cases of stores sent abroad last week was 467, of which 232 were despatched to Boulogne, 113 to Calais, and 50 to Dunkirk. 104 hospitals at home were supplied with 721 cases of stores. The ambulance ships were provided as usual with their weekly supply of garments and comforts for the wounded. 11,052 garments were received during the past week and 14,036 were issued. Of these, 10,331 were sent to hospitals in this country.

SECOND LONDON (CITY OF LONDON) GENERAL HOSPITAL.—More than four months ago we described briefly in this column the manner in which St. Mark's College, Chelsea, and its adjacent buildings were being converted into a complete military general hospital of 520 beds, under the skilful supervision of Lieutenant-Colonel E. M. Callender, the commandant. The work of adaptation was begun on August 10th, and the buildings were open for the reception of patients on Sept. 7th, while the first patients were admitted five days later. The number of beds belonging to this hospital is now nearly 900, for in addition to the 520 at St. Mark's College there are sections at St. Thomas's Hospital (233 beds), Victoria Hospital for Children (40 beds), Great Northern Central Hospital (65 beds), and the Richmond Red Cross Hospital (40 beds). Up to the close of last week 4328 patients had been admitted, including 140 officers, and the number of deaths was less than 20. The vast majority of the cases treated have recovered and gone back to military service. A brief inspection of the whole institution in company with the commandant made it evident that the great organisation which came into being only a very few months ago has settled down into working order, and that all the wheels are moving with the utmost smoothness. The cheerfulness of all the inmates was very noticeable.

More than 500 operations have been performed in the theatre, but these have included few amputations. Very few cases of undoubted tetanus have reached this hospital from the front. Of the four patients two recovered and two died. All cases with septic wounds have injections of tetanus antitoxin as a precautionary measure, and the septic wounds, of which there have been a great many, have done extremely well as a whole. Among the remarkable cases which have been under treatment the following three may be briefly mentioned here: 1. A bullet entered the abdomen half an inch above the pubes in the mid line. The wound of exit was just at the side of and below the tip of the coccyx. There were no symptoms at all from first to last, and the only sign was that after 14 days the patient had a seminal emission consisting largely of blood. 2. A bullet entered the side of the head just below the level of the lower end of the mastoid process. It came out at a similar place on the opposite side. Although for a time there was great muscular stiffness and vertigo on walking, the patient made a complete recovery. 3. A rifle bullet entered the back of the leg just about the popliteal space. It passed downwards and forwards and went right through the knee-joint, passing through the intercondylar notch. It was found in the ligamentum mucosum and removed. The strange feature was that no important tendon, nerve, or vessel was injured, and there was no fracture of any bone.

Largely through the instrumentality of Mr. C. Arthur Pearson it has been decided by the War Office that all cases rendered totally blind in consequence of wounds shall in future be drafted to this hospital where arrangements have been made for them to be visited at the earliest moment by representatives of Mr. Pearson's organisation, so that education may be begun without delay and some of the mental misery lifted from them by personal contact with blind instructors. Afterwards, when they are invalided out of the service, these blind soldiers will be drafted to a convalescent home for the blind. Among the surgeons on the *à la suite* staff of the hospital four—Sir Arbuthnot Lane, Sir Frederic Eve, Mr. G. H. Makins, and Mr. E. H. Fenwick—have left to take up other duties in connexion with the war, whilst another surgeon has dropped out through ill-health. Thus only one of the surgical staff has not been called up so far for active duty at the hospital.

Sir Ronald Ross, K.C.B., F.R.S., has been appointed consulting physician in tropical diseases to the Indian troops in Europe.

Surgeon-General W. D. C. Williams, C.B., commanding the medical units of the Australian Imperial Force in Egypt, had the honour of being received by the King at Buckingham Palace on Monday last.

SOLDIERS AT ST. THOMAS'S HOSPITAL.—At the last court of governors, the treasurer, Mr. J. G. Wainwright, reported that since the opening of the military wards 941 soldiers from the front, including 100 officers, had been treated at St. Thomas's Hospital, the hospital bearing all expenses.

Dr. Edmond Lagelouze, docteur en médecine de la Faculté de Paris, of Béthisy-St.-Pierre, Oise, together with three other inhabitants of the same commune, has by special desire of the King been enrolled an Honorary Associate of the Order of the Hospital of St. John of Jerusalem in England in recognition of distinguished services and great humanity to a wounded British officer on Sept. 1st.

DUBLIN CASTLE RED CROSS HOSPITAL: SURGICAL DRESSERS.—The honorary secretary of the Students' Union of the Royal College of Surgeons in Ireland was informed last week by Mr. Seton Pringle, honorary secretary of the medical committee of the Dublin Red Cross Hospital, that the members of the Medical Units of all Officers Training Corps in Dublin have been recognised as official surgical dressers to that hospital. There was an official opening of the hospital on Wednesday afternoon last, when the medical units paraded in the Upper Castle Yard.

ADDITIONAL BOMBAY WAR HOSPITAL.—The committee of the Bombay Presidency Branch of the Imperial Indian War Relief Fund have offered to the military authorities, through His Excellency the Viceroy, to provide a 500 bed hospital for Indian troops engaged in the war. This offer has been accepted, and measures are now in progress for the organisation of this hospital, which under the title of "The Bombay Presidency Hospital" will be equipped, staffed, and maintained from the Bombay Presidency, including Sind, and will be located probably at some convenient base in Egypt or at any place that the military authorities may, with a view to the requirements of the British Indian Forces operating in the field, determine to be most desirable. The expenditure incurred on the hospital will be entirely defrayed from the Bombay Presidency Branch of the Imperial Indian Relief Fund, in collaboration with the Women's Branch, and its general administration will be under the control of a special subcommittee appointed by the Administrative Committee of the Fund. The Indian Council of the St. John Ambulance Association, Bombay Presidency Centre, will also coöperate in the undertaking.

RED CROSS GIFTS FROM INDIA.—A return of the units received at the St. John Ambulance War Gifts Depôt, Bombay, up to Jan. 5th shows a total of material representing a cash value of no less than 2¼ lakhs of rupees, or £15,000, collected in three months. H.H. the Maharaja Scindia of Gwalior, in addition to the many generous contributions which he has already made towards the comfort and relief of the troops who are now fighting, has recently prepared and despatched to Bombay 500 units for the Indian Branch of the St. John Ambulance Association. Each unit makes provision of clothing and comforts for 10 wounded men.

NAVAL WOUNDED FROM THE NORTH SEA.—Our Edinburgh correspondent writes: "Last night, Jan. 25th, a ship of war landed at South Queensferry a number of men wounded in the North Sea battle on Sunday. The cases numbered 26, and it is understood that none are of a grave nature. The men were conveyed in motor ambulances to the Royal Naval Hospital, South Queensferry. For the second time since the war began Edinburgh Castle has been used as a hospital for German wounded sailors. On Jan. 25th 25 wounded sailors from the *Bluecher* were received at the Castle Hospital. As soon as they arrived at the hospital every attention was shown to them by the medical officers in charge. Fourteen of the men were badly injured, and the officials of the Red Cross Society who have been engaged in dealing with wounded soldiers on their arrival in the city during the past few months say they are the most serious cases they have yet seen. A number of operations were performed without delay. One or two sailors are said to be in a precarious condition."

POSITION OF SAILORS AND SOLDIERS UNDER THE INSURANCE ACT.—To the Medical Benefit Subcommittee of the Insurance Committee for the burgh of Edinburgh there has been submitted a memorandum issued by the Scottish Insurance Commissioners as to medical treatment of insured persons called up for service with His Majesty's Forces. The memorandum states generally that insured persons who belong to the Naval or Army Reserve, or to the Territorial Forces, or have enlisted in the New Army, are regarded as serving as sailors or soldiers from the moment at which they are called up or enlisted and accepted for service until disembodiment or discharge. During this period they are not entitled to medical or sanatorium benefits under the National Insurance Acts, and accordingly no liability for their treatment rests on the panel practitioner by whom they have been accepted. The position of such persons is not affected by the fact that they may be permitted temporarily to continue to reside at home, even though they may be concurrently engaged in civil employment. An insured person who has been sent home owing to illness or in consequence of having been wounded must also be regarded as a serving sailor or soldier until the date of his discharge. Upon discharge, or in a case of a member of the Reserve or Territorial Forces, upon the demobilisation or disembodiment of these forces the insured person will again become entitled to medical benefit under the National Insurance Acts (unless otherwise disentitled).

Medical News.

UNIVERSITY OF OXFORD.—On Jan. 26th Convocation granted a decree to accept the sum of £450 offered by friends of the late Dr. Francis Gotch, F.R.S., Waynflete professor of physiology, to perpetuate his memory and to encourage physiological studies within the University. It is proposed to establish a Gotch Memorial Fund, the income to be expended upon an annual Gotch Memorial Prize, consisting of a bronze medal and a sum of £5, which will be awarded after examination to a member of the University who has worked in the University physiological laboratories for not less than four terms. The remainder of the income will be applied to the establishment and maintenance of a Gotch Memorial Library in the University physiological laboratory.—The following medical degrees were conferred on Jan. 21st:—

B.M., B.Ch.—C. H. L. Harper, Wadham.

UNIVERSITY OF CAMBRIDGE.—The following medical degrees have been conferred:—

M.B., B.C.—C. C. Kerby, Trinity.

SOCIETY OF APOTHECARIES OF LONDON.—At examinations held recently the following candidates were successful in the subjects indicated:—

Surgery.—N. W. Rawlings (Section I.), Manchester; and E. M. Townsend (Sections I. and II.), Middlesex Hospital.
Medicine.—J. A. W. Robinson (Section I.), King's College Hospital; and M. C. Stark (Section I.), London Hospital.
Forensic Medicine.—C. D. Banes, W. F. Matthews, and J. A. W. Robinson, King's College Hospital; and M. C. Stark, London Hospital.
Midwifery.—C. D. Banes, King's College Hospital; H. A. de Morgan, Middlesex Hospital; W. F. Matthews, King's College Hospital; D. C. Ogilvie, Middlesex Hospital; J. A. W. Robinson, King's College Hospital; and M. C. Stark, London Hospital.

ROYAL COLLEGES OF PHYSICIANS AND SURGEONS OF EDINBURGH AND ROYAL FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW.—The quarterly examinations of the above Board, held in Edinburgh, were concluded recently with the following results:—

FIRST EXAMINATION.

Chombil Vittil Appunni Menon and Kaikhasru Sorabji Bhiwandiwalla.
Physics.—Rebecca Goodman, Gordon Spivey Woodhead, William Bethune Stott, and John Lawson Gibson.
Biology.—Gwilym ap Vychan Jones and Joseph Raymond Welply.
Chemistry.—Frederic Leo Jones and Muriel Keyes.

SECOND EXAMINATION.

Shapoor Dinshaw Vania, Robert Gloag Battersby, Lawson Lamb Steele, Thomas Jackson, Thomas Robert Wilson, Alfred Black, Don Adrian Jayasingha, and Arukatti Patabendige Frederick Abeysuriya.
Anatomy.—Oswald Johnston and Buenaventure Ramirez.
Physiology.—Harold Gengoult Smith and Janie Isabel McBirnie.

THIRD EXAMINATION.

Charles Harris, Henry Valentine Fitzgerald, Robert McGregor, William McAlpine, Andrew Mathewson, Edward Spence, and John Alexander Smith.
Pathology.—Frederick Charles Joseph Mitchell and Iwan Davies.
Materia Medica.—James Stewart Durward, Owen Glendower Evans, Frederick Joseph Jack, Harry Morley, Norman Stewart Bruce, John Joseph Mulvey, and Paul Vertennes.

FINAL EXAMINATION.

Maurice Michael Fitzgerald, William Hamilton Wray, Sarah Louisa Rook, Jacobus Johannes de Waal, Harold Oliver Martin, Cawton Frank Pereira, Andrew Finlay Readdie, Horace Palmer Margetts, George Barker Charnock, Charles Clouston Irvine, Harold Damant Atherstone, Claude Trevor Darwent, John Kenneth Garner, and Gerald Douglas Newton.
Medicine.—Percy Chisholm, John Adami, William Leckie Coullie, and Alexander Gray McKee.
Midwifery.—Arthur Macafee Burge, Tanguturi Janakiramiah, George Edward Mendis, and Percy Chisholm.
Medical Jurisprudence.—Octavus Walter Bateman, Bak Hin Ong, Henry Valentine Fitzgerald, Victor Albert Goonetilleke, Oswald Brunlees, Gulabrai Teckchand Makhijani, Thomas Cormack MacGowan, Charles Evelyn Meryon, Arthur Craig, and John Phillips Fairley.

QUEEN'S UNIVERSITY OF BELFAST.—At examinations for the degrees of M B., B.Ch., and B.A.O. held recently, the following candidates were successful:—

William W. Blair, William K. Campbell, Frank L. Cleland, David M. Clements, Robert Condy, Francis J. Devlin, Edmund Doherty (second-class honours), George Gordon, Thomas B. McKee, Frederick McKibbin (second-class honours), Terence P. McQuaid, Edward W. Mann, Samuel A. D. Montgomery, James Park, Malachy G. Paul, John C. Robb, Frederick G. Smyth, John K. Stewart (second-class honours), Martha J. M. Stewart, Patrick W. White, and John C. Wilson (second-class honours).

UNIVERSITY OF LONDON: ADVANCED LECTURES IN PHYSIOLOGY.—A course of eight lectures on Metabolism in Infancy will be given in the Physiological Theatre, Guy's Hospital, Borough, S.E., by Dr. M. S. Pembrey, University reader in physiology, and Mr. J. H. Ryffel, at 4.30 P.M., on Thursdays, Feb. 4th, 11th, 18th, and 25th, and March 4th and 11th. Attendance at this course is recognised in connexion with the B.Sc. (honours) degree in physiology. The lectures, which will be illustrated by experiments, are addressed to advanced students of the University and others interested in the subject. Admission free, without ticket.

LONDON DERMATOLOGICAL SOCIETY.—A meeting of this society was held on Jan. 19th, at St. John's Hospital for Diseases of the Skin, Dr. W. Knowsley Sibley being in the chair, when some good cases were shown. Dr. Pinkus (Warsaw) opened a discussion on Copper Dermatitis.

LEICESTER ROYAL INFIRMARY.—At the last quarterly meeting of the governors and supporters of this institution it was resolved to build and equip a complete pathological and clinical laboratory at an estimated cost of £3500.

WEST OF ENGLAND CENTENARIANS.—On Jan. 20th Mrs. A. Moore, of Plymouth, celebrated the 104th anniversary of her birthday. Mrs. Arthur Mozley, of Cheltenham, celebrated the 100th anniversary of her birthday on Jan. 22nd.

MEDICAL STAFF OF THE VICEROY OF INDIA.—Lieutenant-Colonel T. A. Granger, Assistant Director of Medical Services (Indian Services) has been appointed honorary surgeon on the staff of His Excellency the Viceroy of India from Sept. 15th last, on which date Surgeon-General G. F. A. Harris, Surgeon-General with the Government of Bengal, completed the tenure of his appointment.

LITERARY INTELLIGENCE.—Messrs. J. and A. Churchill announce for publication a new book on "Malay Poisons and Charm Cures," by Mr. J. D. Gimlette, which throws light upon the witchcraft of the medicine man, and discusses the medicines, poisons and their antidotes, of the Federated Malay States. The same publishers also announce "A Textbook of Diseases of the Skin," by Dr. J. H. Sequeira, physician to the skin department at the London Hospital, with new plates from colour photographs, and "The Difficulties and Emergencies of Obstetric Practice," by Mr. Comyns Berkeley and Mr. Victor Bonney, obstetric surgeons to the Middlesex Hospital.

BAZETT *v.* THE LONDON INSURANCE COMMITTEE.—We are informed that two applications have been made in the King's Bench Division before the Master (Sir J. MacDonnell) with regard to this case, which is an action brought by Mr. H. Bazett for a mandamus to compel the London Insurance Committee to proceed to the "assignment" of those insured persons for whose treatment no arrangements had been made on March 31st, 1913, and for damages for their having failed to do so in the course of that year. The first application made by counsel for Mr. Bazett was for the defendants to supply particulars of "the insuperable difficulty of ascertaining with precision the numbers, names, and addresses" of those persons which they allege in their "defence," and an order to that effect was made by the Master. The second application by counsel for the defendants was for the plaintiff to furnish particulars of the numbers of those unallotted persons for whom he claims payment of capitation fees would have been made to him had the assignment taken place, and for details of those persons and of the fees claimed. The order was made for such further particulars to be furnished as the plaintiff might be able to give after "discovery" or production by the defendants of the necessary documents in their possession.

MEDICAL CALLS TO THE BAR.—The following medical men were called to the Bar on Jan. 26th:—Middle Temple: J. W. Miller, M.D., D.P.H. Gray's Inn: A. Foster, M.D., C.M.

ROYAL INSTITUTION.—After his Friday evening discourse on Jan. 22nd at the Royal Institution Sir James Dewar presented to the institution, on behalf of Dr. H. D. Rolleston, the bust of Sir Humphry Davy, executed by Samuel Joseph in 1822.

Dr. Helen MacMurchy has been chosen by the Hon. R. A. Pyne, M.D., Minister of Education for Ontario, to be inspector of auxiliary classes for the training of pupils who, from physical or mental causes, are unable to take proper advantage of the ordinary public school classes of the province.

Appointments.

Successful applicants for vacancies, Secretaries of Public Institutions, and others possessing information suitable for this column, are invited to forward to THE LANCET *Office, directed to the Sub-Editor, not later than 9 o'clock on the Thursday morning of each week, such information for gratuitous publication.*

GULLAND, GEORGE LOVELL, M.D., C.M. Edin., has been appointed to the Chair of Medicine in the University of Edinburgh.

HUDSON, A. C., M.D., B.C. Cantab., F.R.C.S. Eng., has been appointed Ophthalmic Surgeon in Charge of Out-patients at St. Thomas's Hospital.

LEISHMAN, ALEXANDER, M.B., Ch.B. Glasg., has been appointed Medical Officer to the Teesdale Board of Guardians.

MACILRAITH, A. R. M., L.R.C.P. & S. Edin., L.F.P.S. Glasg., D.P.H., has been appointed Assistant Medical Officer of Health of the Borough of Warrington.

MEACHEN, GEORGE N., M.D. Lond., has been appointed Medical Officer to Sherburn Hospital, near Durham.

OLIVER, GEORGE H., D.O. Oxon., M.R.C.S. Eng., L.R.C.P. Lond., has been appointed Honorary Surgeon to the Ophthalmic Department at the Royal Eye and Ear Hospital, Bradford.

RISELEY, STANLEY, M.D. Edin., has been appointed Honorary Consulting Ophthalmic Surgeon to the Sheffield Royal Hospital.

WHITE, Major F. NORMAN, I.M.S., Assistant Director-General, Indian Medical Service, has been appointed a Member of the Simla Municipal Committee.

Vacancies.

For further information regarding each vacancy reference should be made to the advertisement (see Index).

BARNSLEY COUNTY BOROUGH.—Medical Officer of Health. Salary £500 per annum.

BATH, ROYAL UNITED HOSPITAL.—House Physician. Salary £120 per annum, with board, lodging, and washing.

BERMONDSEY MEDICAL MISSION.—Female Resident Junior Assistant. Salary, with board and lodging.

BETHNAL GREEN INFIRMARY, Cambridge-road, N.E.—Assistant Medical Superintendent and Assistant Medical Officer. Salary at rate of £280 and £250 per annum respectively, with apartments, board, and washing.

BIRKENHEAD BOROUGH HOSPITAL.—Senior House Surgeon. Salary £120 per annum, with board and laundry.

BIRKENHEAD EDUCATION COMMITTEE.—School Dental Officer. Also Assistant School Medical Officer. Salary £300 per annum in each case.

BIRMINGHAM CITY MENTAL HOSPITAL, Rubery-hill.—Female Junior Assistant Medical Officer. Salary £200 per annum, with apartments, board, laundry, &c.

BIRMINGHAM GENERAL DISPENSARY.—Resident Medical Officer, unmarried. Salary £240 per annum, with apartments, fire, lights, and attendance.

BOLTON INFIRMARY AND DISPENSARY.—Junior House Surgeon and Third House Surgeon. Salary £150 and £130 per annum respectively, with apartments, board, and attendance.

BRADFORD CHILDREN'S HOSPITAL.—House Surgeon. Salary £120 per annum, with board, residence, and laundry.

BRADFORD ROYAL INFIRMARY.—House Surgeon, unmarried. Salary £100 per annum, with board, residence, and washing.

BRADFORD, ST. LUKE'S HOSPITAL AND UNION HOUSE.—Assistant Resident Medical Officer, unmarried. Salary £150 per annum, with rations, apartments, and washing.

BRECKNOCK COUNTY AND BOROUGH INFIRMARY.—Resident House Surgeon. Salary £120 per annum, with apartments, board, attendance, laundry, &c.

BRIDGWATER HOSPITAL.—House Surgeon, unmarried. Salary at rate of £125 per annum, with board, lodging, and washing.

BRISTOL EYE HOSPITAL.—House Surgeon. Salary £100 per annum, with board, residence, and laundry.

BRISTOL GENERAL HOSPITAL.—Resident Obstetric Officer for six months. Salary at rate of £120 per annum, with board, residence, &c.

BROMSGROVE, WORCESTERSHIRE ASYLUM, Barnsley Hall.—Locum Tenens Medical Officer.

BROOKWOOD, SURREY COUNTY ASYLUM.—Second Assistant Medical Officer. Salary £230 per annum, with board, lodging, and washing.

BURY INFIRMARY.—Junior House Surgeon. Salary £150 per annum, with board, residence, and washing.

CANCER HOSPITAL, Fulham-road, S.W.—House Surgeon for six months. Salary £100 per annum.

CANTERBURY, KENT COUNTY ASYLUM, Chartham.—Third Junior Assistant Medical Officer. Salary £250 per annum, with quarters, board, washing, &c.

CARLISLE, CUMBERLAND AND WESTMORLAND ASYLUM, Garlands.—Junior Assistant Medical Officer, unmarried. Salary £250 per annum, with board, lodging, and washing.

CARMARTHEN JOINT COUNTIES ASYLUM.—Temporary Second Assistant Medical Officer. Salary at rate of £200 per annum, with board, lodging, washing, &c.

COLCHESTER, ROYAL EASTERN COUNTIES' INSTITUTION FOR IMBECILES AND THE FEEBLE-MINDED.—Female Medical Officer. Salary at rate of £200 per annum, with board, apartments, attendance, and washing.

COVENTRY, COVENTRY AND WARWICKSHIRE HOSPITAL. — House Physician. Salary £110 per annum, with rooms, board, washing, and attendance.

DERBY EDUCATION COMMITTEE.—Temporary Assistant School Medical Officer. Salary £300 per annum.

DERBYSHIRE EDUCATION COMMITTEE.—Assistant School Medical Officer. Salary £300 per annum.

DEWSBURY AND DISTRICT GENERAL INFIRMARY.—House Surgeon. Salary £120 per annum, with board, residence, and laundry.

DORCHESTER, DORSET COUNTY COUNCIL.—Temporary Assistant Medical Officer of Health. Salary at rate of £250 per annum.

DUDLEY, GUEST HOSPITAL.—Assistant House Surgeon for six months. Salary £100 per annum, with board, residence, and washing.

EASTERN DISPENSARY, Leman-street, E.—Physician, Gynæcologist, and One or more Medical Officers for Evening Work.

ECCLES AND PATRICROFT HOSPITAL.—House Surgeon, unmarried. Salary £70 per annum, with board, lodging, and washing.

EXETER, ROYAL DEVON AND EXETER HOSPITAL.—Senior House Surgeon for 12 months. Also House Physician and Assistant House Surgeon for six months. Salary at rate of £250 per annum for senior post and £150 for junior posts, with board, apartments, and washing.

GLOUCESTER COUNTY ASYLUM Barnwood, near Gloucester.—Assistant Medical Officer, unmarried. Salary £250 per annum, with board, lodging, laundry, and attendance.

GREAT YARMOUTH HOSPITAL.—House Surgeon, unmarried. Salary £200 per annum, with board, lodging, and washing.

GUILDFORD, ROYAL SURREY COUNTY HOSPITAL.—House Surgeon. Salary £150 per annum, with board, residence, and laundry.

HALIFAX ROYAL INFIRMARY.—Second and Third House Surgeons, unmarried. Salary £120 and £100 per annum respectively, with residence, board, and washing.

HAMPSTEAD GENERAL AND NORTH-WEST LONDON HOSPITAL.—House Physician for six months. Salary at rate of £70 per annum, with board, lodging, residence, and laundry.

HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST, Brompton, S.W.—Anæsthetist. Salary 50 guineas per annum. Also Assistant Resident Medical Officer. Salary £100 per annum, with board and residence.

HOSPITAL FOR DISEASES OF THE SKIN, 52, Stamford-street, Blackfriars.—Assistant Physician or Assistant Surgeon.

HOSPITAL FOR SICK CHILDREN, Great Ormond-street, London, W.C.—Two House Surgeons, unmarried, for six months. Salary £30, with board, residence, &c.

HULL, VICTORIA CHILDREN'S HOSPITAL, Park-street.—Female House Surgeon and Female Assistant House Surgeon. Salary £60 and £50 per annum respectively, with board and laundry. Or Male Resident House Surgeon. Salary £60 per annum, with board and laundry.

LEEDS PUBLIC DISPENSARY.—Honorary Medical Officer and Honorary Officer in Charge of Surgical Cases at Southern Branch, Hunslet-lane.

LIVERPOOL, COUNTY ASYLUM, Rainhill.—Locum Tenens Assistant Medical Officer.

LONDON LOCK HOSPITAL, Dean-street, Soho, W.—House Surgeon for six months. Salary at rate of £100 per annum.

MANCHESTER CHILDREN'S HOSPITAL, Pendlebury.—Visiting Surgeon. Salary £100 per annum.

MANCHESTER, COUNTY ASYLUM, Prestwich.—Assistant Medical Officer, unmarried. Salary £250 per annum, with board, apartments, attendance, and washing.

MANCHESTER EDUCATION COMMITTEE.—Two Assistant School Medical Officers. Salary £300 per annum.

MANCHESTER HOSPITAL FOR CONSUMPTION AND DISEASES OF THE THROAT AND CHEST.—Assistant Medical Officer for the Crossley Sanatorium, Delamere Forest, Cheshire. Salary £100 per annum, with board, apartments, and laundry.

MANCHESTER NORTHERN HOSPITAL FOR WOMEN AND CHILDREN, Park-place, Cheetham Hill-road.—House Surgeon. Salary £120 per annum, with apartments and board.

MANCHESTER, VICTORIA MEMORIAL JEWISH HOSPITAL, Cheetham.—Female Resident Medical Officer for six months. Salary at rate of £100 per annum, with rooms, board, and laundry.

METROPOLITAN HOSPITAL, Kingsland-road, N.E.—Two Assistant House Surgeons for six months. Salary at rate of £40 per annum, with board and washing.

MILLER GENERAL HOSPITAL FOR SOUTH-EAST LONDON, Greenwich-road, S.E.—Junior House Surgeon for six months. Salary £85 per annum, with board, residence, and laundry.

NEWCASTLE-UPON-TYNE POOR-LAW INSTITUTION.—Second Assistant Resident Medical Officer. Salary at rate of £200 per annum, with apartments, rations, and washing.

NEWPORT (MON.), ROYAL GWENT HOSPITAL.—Resident Medical Officer. Salary for first six months at rate of £100 per annum, second six months £125, and third six months £150, with board, residence, and laundry.

NORTHAMPTON COUNTY ASYLUM.—Second Assistant Medical Officer. Salary £250 per annum, with board, &c.

NOTTINGHAM GENERAL HOSPITAL.—Senior House Physician. Salary £120 per annum, with board, residence, and laundry. Also Assistant House Surgeon for six months. Salary at rate of £100 per annum, with board, residence, and laundry.

PRESTON ROYAL INFIRMARY.—Assistant Resident Medical and Surgical Officer. Salary £120 per annum, with board, residence, and laundry.

RICHMOND, SURREY, ROYAL HOSPITAL.—House Surgeon. Salary £150 per annum, with apartments, board, and washing.

ROYAL WATERLOO HOSPITAL FOR CHILDREN AND WOMEN, S.E.—Second Resident Medical Officer. Salary at rate of £100 per annum, with board and washing.

SALFORD ROYAL HOSPITAL.—Casualty House Surgeon. Salary at rate of £100 per annum, with board and residence.

SALFORD UNION INFIRMARY.—Resident Assistant Medical Officer, unmarried. Salary £150 per annum, with apartments, attendance, and rations.

SALISBURY INFIRMARY.—Assistant House Surgeon, unmarried. Salary £75 per annum, with apartments, board, lodging, and washing.

SHEFFIELD CHILDREN'S HOSPITAL.—House Surgeon. Salary £150 per annum, with board and residence.

SHEFFIELD CITY HOSPITALS FOR INFECTIOUS DISEASES AND TUBERCULOSIS.—First Assistant Medical Officer, Second Assistant Medical Officer, and Third Assistant Medical Officer. Salary £250, £225, and £200 per annum respectively, with apartments, rations, laundry, and attendance.

SHEFFIELD ROYAL INFIRMARY.—House Surgeon and Assistant House Physician. Salary £100 per annum, with board and residence.

SOUTHAMPTON, ROYAL SOUTH HANTS AND SOUTHAMPTON HOSPITAL.—Junior House Surgeon for six months. Salary at rate of £120 per annum, with rooms, board, and washing.

SOUTH SHIELDS, INGHAM INFIRMARY AND SOUTH SHIELDS AND WESTOE DISPENSARY.—Junior House Surgeon. Salary £115 per annum, with residence, board, and washing.

STOKE-ON-TRENT EDUCATION COMMITTEE.—Assistant School Medical Officer. Salary £300 per annum.

STOKE-ON-TRENT, NORTH STAFFORDSHIRE INFIRMARY, Hartshill.—House Physician and House Surgeon, unmarried. Salary at rate of £150 per annum, with board, residence, and washing.

STOKE-ON-TRENT, STANFIELD SANATORIUM.—Resident Assistant Medical Officer. Salary at rate of £350 per annum.

STROUD GENERAL HOSPITAL.—House Surgeon. Salary £120 per annum, with board, lodging, and washing.

TAUNTON AND SOMERSET HOSPITAL, Taunton.—Senior House Surgeon. Salary £120 per annum, with board, lodging, and laundry.

THROAT HOSPITAL, Golden-square, W.—Resident House Surgeon. Salary £75 per annum, with board, residence, and washing.

TRURO, ROYAL CORNWALL INFIRMARY.—House Surgeon, unmarried. Salary £150 per annum, with rooms, board, and washing.

TUNBRIDGE WELLS GENERAL HOSPITAL.—House Surgeon, unmarried. Salary £100 per annum, with board, residence, &c.

VICTORIA HOSPITAL FOR CHILDREN, Tite-street, Chelsea, S.W.—House Physician for six months. Salary £40, with board and lodging.

WAKEFIELD, CLAYTON HOSPITAL.—Senior House Surgeon. Salary £160 per annum, with board, lodging, and laundry.

WALSALL AND DISTRICT HOSPITAL.—Junior House Surgeon and Anæsthetist. Salary £110 per annum, with board, residence, and laundry.

WEST BROMWICH AND DISTRICT HOSPITAL.—House Surgeon and Assistant House Surgeon, unmarried. Salary £150 and £120 per annum respectively, with residence, board, and laundry.

WEST HAM AND EASTERN GENERAL HOSPITAL, Stratford, E.—Junior House Surgeon. Salary at rate of £100 per annum, with board, residence, and washing.

WEST HAM UNION.—SICK HOME, 95, Forest-lane, Forest Gate, E.: Second Assistant Medical Officer. Salary £200 per annum, with residential allowances.—WORKHOUSE, Union-road, Leytonstone, N.E.: Female Assistant Medical Officer. Salary £140 per annum, with residential allowances.—INFIRMARY, Whipps Cross-road, Leytonstone, N.E.: Second Assistant Medical Officer. Salary £260 per annum, with residential allowances.

WHITECHAPEL DISPENSARY FOR THE PREVENTION OF CONSUMPTION.—Assistant Medical Officer. Salary £250 per annum.

WIGAN, ROYAL ALBERT EDWARD INFIRMARY AND DISPENSARY.—Female Junior House Surgeon. Salary £130 per annum, with board, apartments, and washing.

WOLVERHAMPTON AND STAFFORDSHIRE GENERAL HOSPITAL.—House Surgeon for six months. Salary at rate of £125 per annum, with board, rooms, and laundry.

WORCESTER GENERAL INFIRMARY.—Resident Medical Officer. Salary £150 per annum, with board, residence, and washing.

THE Chief Inspector of Factories, Home Office, London, S.W., gives notice of vacancies for Certifying Surgeons under the Factory and Workshop Acts at Clogher, in County Tyrone; and at Hawes, in the county of Yorkshire.

Births, Marriages, and Deaths.

BIRTHS.

RUTHERFORD.—On Jan. 23rd, at Frith Manor, Mill Hill, N.W., the wife of Major N. C. Rutherford, R.A.M.C. (T.F.), of a daughter.

TWIGG.—On Jan. 24th, at Derwent House, Derby, the wife of G. W. Twigg, M.D., Temporary Lieutenant, R.A.M.C., of a daughter.

MARRIAGES.

MATHER—WARD.—On Jan. 20th, at St. Nicholas Parish Church, Liverpool, Edward Elton, Lieutenant, R.A.M.C., to Alice Muriel, daughter of Lewis Ward, of Liverpool.

DEATHS.

NEWTON.—On Jan. 19th, at The Yews, Lakenheath, Suffolk, after a very short illness, William Thomas Newton, M.R.C.S., L.S.A., aged 63 years, late Divisional Surgeon, G Division, Metropolitan Police.

SHAPLAND.—On Jan. 23rd, at Burnside, Exmouth, suddenly, John Dee Shapland, M.R.C.S., L.S.A., aged 75 years.

N.B.—A fee of 5s. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Short Comments, and Answers to Correspondents.

POPULAR MEDICINE IN GERMANY.

MODERN Germany is greatly victimised by quacks, and anyone who has had to do with a *hoch-kulturirt* German or Austrian knows how much he or she is likely to be the dupe of dietetic and therapeutic faddists. The attitude adopted is one of quaint, solemn, and almost grotesque caution in matters of domestic medication. Such a work, for instance, as Father Kneipp's "My Water-Cure," which attained its jubilee in 1896, may be compared to John Wesley's "Primitive Physick," of which the twenty-first edition appeared in London in 1785, while the last and twenty-seventh edition was published in New York in 1814. Father Kneipp, who was Secret Chamberlain to the Pope and parish priest of Wörishofen, in Bavaria, made a grand discovery when, about 50 or more years after the English, he found out the virtues of cold water. Throughout his book he regards cold water with solemnity as though it were a scarce and valuable but rather dangerous drug. He fights the good fight in its cause, and demolishes the objections of those who object to it on the grounds of "extraction of warmth." His illustrative anecdotes are delightful—a picture of domestic Germany throughout the nineteenth century. We read, for instance, of the "gentleman of high position" who had "an excessive aversion for water," and whose neck was so sensitive that he scarcely knew how to take enough care of it." The picture of Father Kneipp himself seated in a cold bath in midwinter and sponging the lower half of his stomach is meant to excite respect for his courage as an innovator. The record of the "Masserl" or highest number of pints, sometimes amounting to 10, which could be taken by the winner in a water-drinking tournament, is given as proof of self-devotion to a new cause.

THE OWNERSHIP OF BULLETS.

To the Editor of THE LANCET.

SIR,—With reference to the amusing and interesting remarks of a Swiss correspondent in THE LANCET of Jan. 23rd referring to the ownership of bullets, I have some recollection of an action at law in one of the continental courts being reported in your columns, where a young man claimed the bullet as he wished to have it mounted in gold as a trinket. This idea of the souvenir seems to be mainly at the bottom of the question, and is one which also concerns the jeweller perhaps. I read not many weeks ago that a German or Austrian lady of high rank was having certain soldiers' bullets mounted in gold for them free of charge. The question as to ownership has its comic side, and you reported once in THE LANCET the case of a bullet being extracted from a marine after it had worked its way from the hip to the calf, after being 42 years in the man's body.

I am, Sir, yours faithfully,

Jan. 25th, 1915. ALBUS.

TREATMENT OF THREADWORMS.

F. F., a medical man, asks if any practitioner can suggest treatment for a case of threadworms of long duration in an adult. The patient has had treatment in the country and also from London consultants without permanent benefit, and our correspondent is at a loss what further to do.

BOVRIL PICTURES.

Messrs. Bovril, Limited, have forwarded us copies of the three bonus pictures of their current picture scheme, the largest being framed and the other two unframed. The large picture is an artist's proof of a photogravure after a painting by Mr. Arthur Elsley, entitled "A Private Rehearsal," and depicts a little girl performing a pirouette *sur la pointe du pied* in a drawing-room to the delight of the assembled company of young and old. Another work by the same artist is entitled "Good Night," and represents a young mother about to put the last-born in its cot in the presence of its brother and sister. The third picture is by Mr. A. de Breanski, jun., is entitled "A Welsh Valley," and shows a mountainous background and a rushing stream with stepping-stones being crossed by a peasant. The atmosphere is well managed. The pictures have all been produced by Messrs. C. W. Faulkner and Co., of London, in their usual excellent style.

Messrs. John Bell and Croyden, Limited, of 50, Wigmore-street, London, W., have published a card which contains a monthly calendar and a brief summary of the most important changes in the new British Pharmacopœia. A copy will be sent to any of our readers on application.

Mr. Cuthbert Reid.—We fear we could not reprint the article, but some further reference to the subject might be made.

Medical Diary for the ensuing Week.

SOCIETIES.

ROYAL SOCIETY, Burlington House, London, W.
THURSDAY.—Papers:— Prof. G. H. Bryan and Mr. R. Jones: Discontinuous Fluid Motion Past a Bent Plane, with Special Reference to Aeroplane Problems.—Mr. T. R. Merton: On the Spectra of Ordinary Lead and Lead of Radioactive Origin (communicated by Prof. A. Fowler).—Mr. A. O. Rankine: On the Viscosity of the Vapour of Iodine (communicated by Prof. A. W. Porter).

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.
TUESDAY.
SECTION OF PATHOLOGY (Hon. Secretaries—Gordon W. Goodhart, C. Price-Jones).
Laboratory Meeting in the Pathological Department, Guy's Hospital, S.E.: at 8.30 P.M.
Dr. R. A. Chisolm and Dr. G. Marshall: The Active Principle of the Pituitary in Health and Disease.
Dr. P. P. Laidlaw: Some Anaerobic Methods.
Dr. J. H. Ryffel: Hæmatoporphyrin in Fæces.
Dr. J. W. H. Eyre.
Dr. G. W. Goodhart: (1) Four Tumours of the Suprarenal Medulla; Ganglioneuroma and Neurocytoma; (2) Two Cases of Infarction of the Heart; (3) Case for Diagnosis: A Tumour of the Liver and Spleen associated with Bacillus Tuberculosis.
WEDNESDAY.
SECTION OF OPHTHALMOLOGY (Hon. Secretaries—Leslie Paton, Elmore Brewerton): at 8.30 P.M.
Cases:
Mr. Bernard Cridland: Case of Glass-worker's Cataract in a "Puddler" (Iron-smelter).
Papers:
Dr. Batten and Mr. Stephen Mayou: Cerebral Degeneration associated with Macula Changes: with Pathological Examination of a Case.
Mr. Leslie Paton: The Montessori System and its Use for Children with Defective Sight.
SECTION FOR THE STUDY OF DISEASE IN CHILDREN (Hon Secretaries—Philip Turner, J. D. Rolleston, Sidney Gilford).
Members are specially invited to attend the discussion of Mr. Leslie Paton's paper at the meeting of the Section of Ophthalmology. (See above.)
THURSDAY.
SECTION OF OBSTETRICS AND GYNÆCOLOGY (Hon. Secretaries—C. Hubert Roberts, Cuthbert Lockyer): at 8 P.M.
Specimens:
Dr. Maxwell: Fibroid of Uterus showing Invasion by Tubercle.
Short Communications:
Dr. Maxwell: Inversion of Uterus—(1) Acute; (2) Chronic.
Dr. Russell Andrews: Carcinoma in an Ovarian Teratoma.
Paper:
Dr. Herbert Spencer: Ruptured Unilateral Solid Cancer of Ovary Removed, Subsequent Pregnancies and Good Health.
FRIDAY.
SECTION OF LARYNGOLOGY (Hon. Secretaries—Cecil I. Graham, W. D. Harmer): at 4 P.M.
Dr. Hill: Specimens of Laryngeal Carcinoma.
Dr. Kelson: Case of Laryngeal Obstruction.
Dr. Jobson Horne: Sections of Pachydermia Laryngis.
Mr. Stuart-Low: (1) Case of Epithelioma of Pharynx and Tongue; (2) Mediastinal Tumour.
Mr. E. D. Davis: (1) Three Cases of Pituitary Tumour; (2) Case of Nasopharyngeal Fibroma.
Sir William Milligan: (1) Note on After-treatment of Submucous Resection of Nasal Septum; (2) Case of Chronic Lymphangitis of Nose.
Mr. C. I. Graham; (1) Epithelioma of Pharynx and Tongue after Operation; (2) Case of Tuberculous Inferior Turbinal.
Dr. E. A. Peters: Cases.
SECTION OF ANÆSTHETICS (Hon. Secretaries—Cecil Hughes, F. E. Shipway): at 8.30 P.M.
Paper:
Mr. H. Finnemore, B.Sc., F.I.C.: Anæsthetic Ether.
Discussion:
On Method of Induction of Anæsthesia; to be opened by the President, Dr. Harold Low.

RÖNTGEN SOCIETY, at the Middlesex Hospital, W.
TUESDAY.—8.15 P.M., General Meeting. Paper:—Dr. S. Russ: Measurements of the Radiation from the Coolidge and other X Ray Tubes in Clinical Use. Dr. C. R. C. Lyster will show a Coolidge Tube. A "Victor" Interrupterless Transformer will be exhibited.

NORTH-EAST LONDON CLINICAL SOCIETY, Prince of Wales's Hospital, Tottenham, N.
THURSDAY.—4.15 P.M., Clinical Meeting.

WEST LONDON MEDICO-CHIRURGICAL SOCIETY, Society's Rooms, West London Hospital, Hammersmith-road, W.
FRIDAY.—8.30 P.M., Pathological Evening.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.
MONDAY.—Clinics:—10.30 A.M., Surgical Out-patient (Mr. B. Gillespie). 2.30 P.M., Medical Out-patient (Dr. T. R. Whipham); Gynæcological (Dr. J. B. Banister). 3 P.M., Medical In-patients (Dr. R. M. Leslie).

TUESDAY.—2.30 P.M., Operations. Clinics:—Medical Out-patient (Dr. A. G. Auld); Surgical (Mr. Howell Evans); Nose, Throat, and Ear (Mr. H. D. Gillies). X Rays and Electrical Methods (Dr. Metcalfe). 3.30 P.M., Medical In-patient (Dr. A. J. Whiting). 4.30 P.M., Lecture:—Mr. J. Howell Evans: Observations on the Surgery of the Present War.

WEDNESDAY.—Clinics:—2 P.M., Throat Operations (Mr. Gillies). 2.30 P.M., Children's Out-patient (Dr. T. R. Whipham); Skin (Dr. G. N. Meachen); Eye (Mr. Brooks).

THURSDAY.—2.30 P.M., Gynæcological Operations (Dr. A. B. Giles). Clinics:—Medical Out-patient (Dr. A. J. Whiting); Surgical (Mr. Carson); X Rays and Electrical Methods (Dr. Metcalfe).

FRIDAY.—2.30 P.M., Operations. Clinics:—Medical Out-patient (Dr. A. G. Auld); Surgical (Mr. E. Gillespie); Eye (Mr. R. P. Brooks).

POST-GRADUATE COLLEGE, West London Hospital, Hammersmith-road, W.

MONDAY.—10 A.M., Dr. Simson: Diseases of Women. 10.30 A.M., Medical Registrar: Demonstration of Cases in Wards. 12 noon, Dr. Bernstein: Pathological Demonstration. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. D. Armour: Operations. Dr. Pritchard: Bacterial Therapy Department. Mr. B. Harman and Mr. Gibb: Diseases of the Eye.

TUESDAY.—10 A.M., Dr. Owen: Demonstration of Cases in Wards. 12 noon, Mr. T. Gray: Demonstration of Fractures, &c. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Baldwin: Operations. Dr. Davis: Diseases of the Throat, Nose, and Ear. Dr. Pernet: Diseases of the Skin.

WEDNESDAY.—10 A.M., Dr. Saunders: Diseases of Children. Dr. Davis: Operations of the Throat, Nose, and Ear. 11 A.M., Mr. Souttar: Demonstration of Minor Operations. 12 noon, Lecture:—Mr. Souttar: Abdominal Diagnosis. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Pardoe: Operations. Dr. Simson: Diseases of Women. Mr. Gibb: Diseases of the Eye.

THURSDAY.—9 A.M., Dr. Bernstein: Bacterial Therapy Department. 12 noon, Lecture: Dr. G. Stewart: Neurological Cases. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. D. Armour: Operations. Mr. B. Harman: Diseases of the Eye.

FRIDAY.—10 A.M., Dr. Simson: Gynæcological Operations. 10.30 A.M., Surgical Registrar: Demonstration of Cases in Wards. 12.15 P.M., Lecture:—Dr. Bernstein: Applied Pathology. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Baldwin: Operations. Dr. Davis: Diseases of the Throat, Nose, and Ear. Dr. Pernet: Diseases of the Skin.

SATURDAY.—10 A.M., Dr. Saunders: Diseases of Children. Dr. Davis: Operations of the Throat, Nose, and Ear. Mr. B. Harman: Eye Operations. 12 noon, Lecture:—Mr. Souttar: Surgical Anatomy of the Abdomen. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Pardoe: Operations.

CENTRAL LONDON THROAT, NOSE, AND EAR HOSPITAL, Gray's Inn-road, W.C.

TUESDAY.—3 P.M., Lecture:—Dr. Dan McKenzie: Endoscopy.

THE THROAT HOSPITAL, Golden-square, W.

MONDAY.—5.15 P.M., Special Demonstration of Selected Cases.
THURSDAY.—5.15 P.M., Clinical Lecture.

ROYAL INSTITUTION OF GREAT BRITAIN, Albemarle-street, Piccadilly, W.

MONDAY.—5 P.M., General Meeting.
TUESDAY.—3 P.M., Prof. C. S. Sherrington: Muscle in the Service of Nerve. (Lecture III.)
THURSDAY.—3 P.M., Mr. H. G. Plimmer: Modern Theories and Methods in Medicine—Lecture III.: Methods and Results. (Illustrated by experiments, micro-photographs, &c., and Cinematograph films.)
FRIDAY.—9 P.M., Prof. A. W. Crossley: Science and Industrial Problems.

MANCHESTER HOSPITALS POST-GRADUATE CLINICS.

THURSDAY.—ANCOATS HOSPITAL, Mill-street.—4.30 P.M., Dr. C. E. Lea: Subjective Symptoms of Heart Disease.

For further particulars of the above Lectures, &c., see Advertisement Pages.

EDITORIAL NOTICES.

IT is most important that communications relating to the Editorial business of THE LANCET should be addressed *exclusively* "TO THE EDITOR," and not in any case to any gentleman who may be supposed to be connected with the Editorial staff. It is urgently necessary that attention should be given to this notice.

It is especially requested that early intelligence of local events having a medical interest, or which it is desirable to bring under the notice of the profession, may be sent direct to this office.

Lectures, original articles, and reports should be written on one side of the paper only, AND WHEN ACCOMPANIED BY BLOCKS IT IS REQUESTED THAT THE NAME OF THE AUTHOR, AND IF POSSIBLE OF THE ARTICLE, SHOULD BE WRITTEN ON THE BLOCKS TO FACILITATE IDENTIFICATION.

Letters, whether intended for insertion or for private information, must be authenticated by the names and addresses of their writers—not necessarily for publication.

We cannot prescribe or recommend practitioners.

Local papers containing reports or news paragraphs should be marked and addressed "To the Sub-Editor."

Letters relating to the publication, sale, and advertising departments of THE LANCET *should be addressed "To the Manager."*

We cannot undertake to return MSS. not used.

MANAGER'S NOTICES.

THE INDEX TO THE LANCET.

THE Index and Title-page to Vol. II. of 1914 were given in THE LANCET of Dec. 26th, 1914.

VOLUMES AND CASES.

VOLUMES for the second half of the year 1914 are now ready. Bound in cloth, gilt lettered, price 16*s.*, carriage extra.

Cases for binding the half year's numbers are also ready. Cloth, gilt lettered, price 2*s.*, by post 2*s.* 3*d.*

To be obtained on application to the Manager, accompanied by remittance.

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WILL Subscribers please note that only those subscriptions which are sent direct to the Proprietors of THE LANCET at their Offices, 423, Strand, London, W.C., are dealt with by them? Subscriptions paid to London or to local newsagents (with none of whom have the Proprietors any connexion whatever) do not reach THE LANCET Offices, and consequently inquiries concerning missing copies, &c., should be sent to the Agent to whom the subscription is paid, and *not* to THE LANCET Offices.

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METEOROLOGICAL READINGS.

(Taken daily at 8.30 a.m. by Steward's Instruments.)

THE LANCET Office, Jan. 27th, 1915.

Date.	Barometer reduced to Sea Level and 32° F.	Direction of Wind.	Rainfall.	Solar Radio in Vacuo.	Maximum Temp. Shade.	Min. Temp.	Wet Bulb.	Dry Bulb.	Remarks.
Jan. 21	29·218	S.W.	0·02	54	46	43	44	44	Overcast
,, 22	29·258	N.W.	0·94	37	37	34	33	34	Snowing
,, 23	29·390	N.E.	0·09	38	38	28	29	29	Foggy
,, 24	29·690	E.	...	50	44	29	33	36	Clouoy
,, 25	29·678	N.E.	...	49	42	36	38	38	Cloudy
,, 26	29·630	N.E.	0·01	49	43	37	37	38	Overcast
,, 27	29·556	E.	...	41	39	38	36	38	Overcast

The following magazines, journals, &c., have been received:—Malaria e Malattie dei Paesi Caldi, Bristol Medico-Chirurgical Journal, Quarterly Journal of Medicine, Psychoanalytic Review, Canadian Practitioner, Archives of Internal Medicine, American Journal of Roentgenology, Albany Medical Annals, Archives of Pediatrics, Indian Medical Record, La Pediatria, Hospital Assistant, Review of Neurology and Psychiatry, Pacific Medical Journal, Journal of Tropical Medicine and Hygiene, &c.

Communications, Letters, &c., have been received from—

A.—Army and Navy Male Nurses' Co-operation, Lond., Secretary of; Mr. Conrad A. Achner, Lond.; Messrs. H. Reeve, Angel and Co., Lond.; Dr. K. B. Allan, Coomassie; Academy of Medicine, Paris; Dr. Henry Russell Andrews, Lond.; Aymard Patent Milk Steriliser Co., Ipswich.

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